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**THE NATIVE ARCHITECTURE OF ASIR
REGION IN SAUDI ARABIA : STONE
DUCT TOWERS OF THE HIGHLANDS**

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DEPARTMENT OF ARCHITECTURE

1996



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

DECLARATION

I declare that this thesis is solely my work.

DEDICATION

to my wife

ABSTRACT

This thesis is about the native architecture of the highlands of the 'Asīr region in the south-western corner of Saudi Arabia. The thesis is made up of two parts. The first part introduces the region and its architecture. It has four chapters. The first chapter discusses a wide range of issues and its relationship to the architecture. The second chapter discusses significant cultural and social aspects of the people, and their impact on the architecture. The third chapter introduces the native architecture of the highlands, and classifies this architecture into towers and villages. It provides ground plans for the most important types of towers, and assigns them to their geographic and tribal context. The chapter also describes the basic features of these towers and villages. The fourth chapter describes the natural features of the highlands and their influence on selected stone-built villages.

The second part is devoted to the study of one type of tower built in the central and south sections of the highlands: the duct tower. Twelve duct towers are under close focus in this part. This part has five chapters. Chapter five classifies the duct types of these towers and explores the purpose of the duct. Chapter six describes and argues the purpose of three duct grain towers built in different physical contexts. The first tower is an isolated tower. The second tower is built inside a compact stone village. The third tower and its companions overlook a stone village. Chapter seven describes three duct defensive towers. The first tower is built inside a defended stone village. The second tower is built outside a compact village. The third tower is built within a fortress. Chapter eight describes three watch and retreat towers. The first tower is a simple duct tower. The second tower is of the platform-duct type. These two towers are built overlooking stone villages. The third tower is a round duct tower built beside grain fields. Other round towers are also discussed in this chapter. Chapter nine describes three duct residential towers. Two of these towers are built together and the third tower is isolated. Other residential towers in the south section are also discussed in this chapter.

The thesis ends with an assessment of the findings and suggests the most important conclusions that can be drawn from this research. Drawings are used intensively throughout the thesis to deliver messages that could not be accommodated in the text.

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*PART I: INTRODUCING THE NATIVE
ARCHITECTURE OF THE HIGHLANDS
OF 'ASĪR*

THE NATIVE ARCHITECTURE OF 'ASĪR REGION IN SAUDI ARABIA : STONE DUCT TOWERS OF THE HIGHLANDS

INTRODUCTION

This thesis is about the native architecture of 'Asīr region in Saudi Arabia. Located in the south-western corner of the country (figure 1), it is bordered by al-Ḥijāz region from the north, and Yemen to the south. To the west 'Asīr is bordered by the Red Sea, while the sands of al-Rub' al-Khālī desert border the region to the east.

'Asīr has a population of more than 1.5 million inhabitants (Āl Sa'ūd, 1989, 22). Some of the population live in large towns. But most people live in villages. The most important towns of the region are: Abha which is the seat of the government, Khamīs Mushaiṭ which is a commercial centre, Bīsha, al-Bāḥa, al-Nimāṣ, Sarā 'Abīda, Ṣahrān al-Janūb, al-Qunfudha and Jizān. The last two are ports on the Red Sea.



Figure 1.1.

The location of 'Asīr

Topographic features

The term " 'Asīr" has topographic connotations. It means " difficult". The 'Asīr region is divided by the escarpment into two main parts: the lowlands and the uplands. Here is a brief description of these three topographic features:

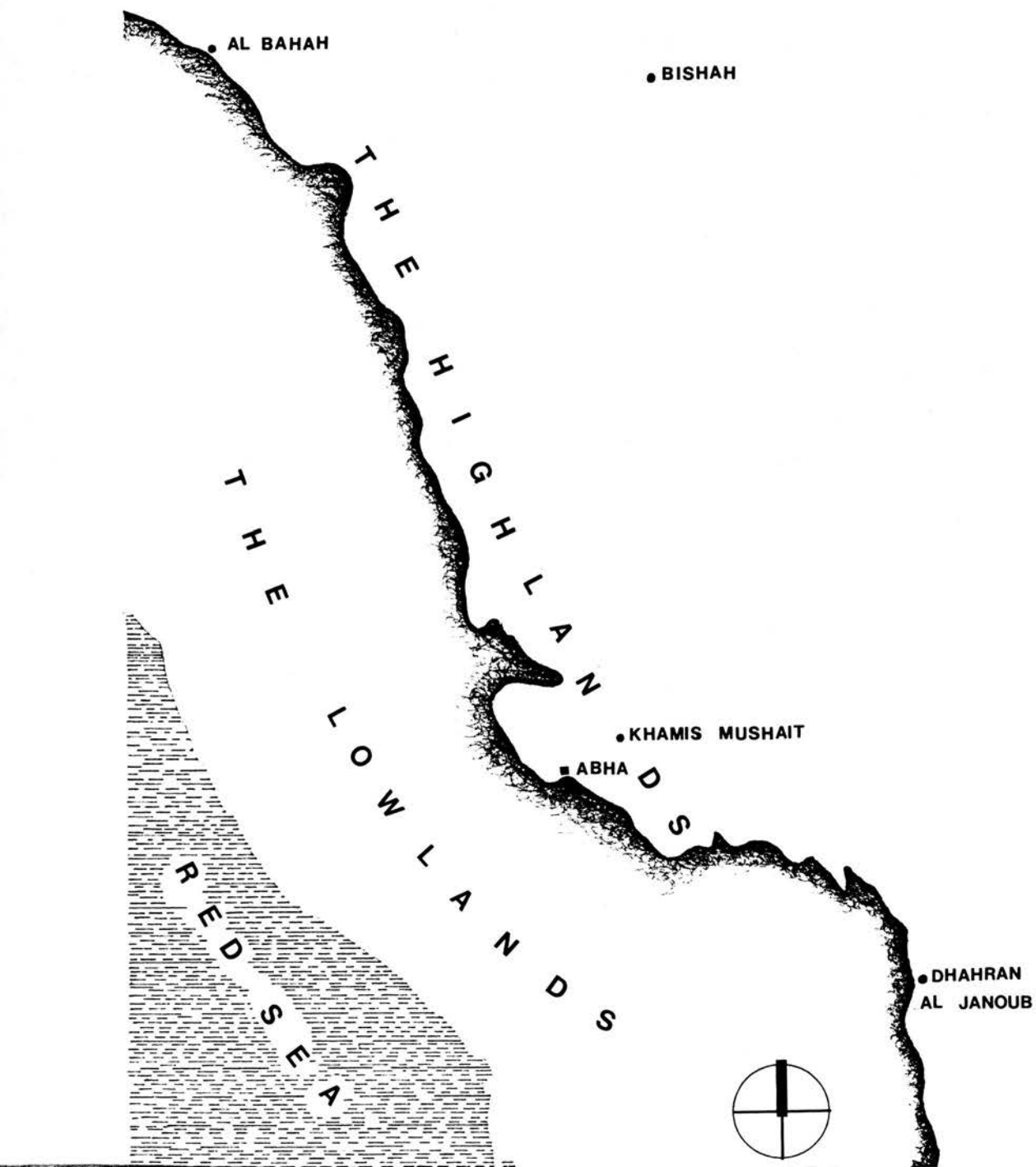


Figure 1.2.
The topographic features of 'Asir

0 25 50 75 100km

The escarpment (*al-ṭawr*, *al-jarf*, *al-shafa*, or *al-hawwa*)

ʿAsīr region is incorporated into the mountainous chain that covers the west part of the Arabian Peninsula, known as "The Arabian Shield". This chain extends from al-ʿAqaba port in Jordan, at the north end of the Red Sea, and extends all the way south to Yemen. In the Ḥijāz region and in Yemen, this chain slopes gradually towards the east and the west. But in the ʿAsīr region this chain slopes sharply to the west, defining the two parts which form ʿAsīr; the lowlands to the west of the escarpment, and the highlands to the east of the escarpment.

The escarpment is a sudden depression of the mountains as they reach their highest altitudes. The contour line of the escarpment is between 50-70 meters with sharp angles that range from 75-90 m. in most parts (Headley, 1960, 708) . The escarpment is responsible for the geographic features of the region which in turn has shaped its natural and the cultural landscape . It isolates the uplands from the Red Sea coast. It also isolates the lowlands from the rest of the Arabian Peninsula. In both parts such an isolation has resulted in different types of architecture, as we will see throughout the thesis.

The lowlands (*Tihāma*)

Starting from the Red Sea coast, the lowlands is divided into three sections: the coastal strip (*tihāma al-sāḥil*), the interior section (*tihāma al-aṣḍār*), and the isolated mountains. The coastal strip runs along the Red Sea coast. The average width of the strip is 50 km. It features gentle plains and sand dunes. The highest altitude of this area reaches 500 m. on the east side of the coastal strip .

The interior section of the lowlands runs parallel to the escarpment . It features a hilly landscape that rises to the east, where it is incorporated into the escarpment. The average altitude of this section (‘Asīrī, 1987, 53) ranges from 1000-2000 m. As this section gets closer to the escarpment in the east, it hosts a number of isolated mountains with altitudes that reach more than 2500m. above sea level. The most notable mountains are Hāda, Tharbān, al-Raith, Banī Mālik, and Faifa. These mountains have developed their own eco-system and their distinctive architecture.

The uplands (*al-sarā*)

The uplands (*al-sarā*) are located to the east of the escarpment , and is divided into two sections: the highlands and the interior plateau.

The highlands (*al-shu‘ūf*)

The highlands (*al-shu‘ūf*) comprise the mountainous strip that runs immediately close to the escarpment. The average width of this strip is 28 km. The highlands can be divided into three sections: the north, the central, and the south sections. The north section runs from the southern frontiers of the Ḥijāz region -where it is separated by a gentle depression- southward, where it ends into an inclination towards the east. The altitude of this section (Āl Sa‘ūd, 1989, 23) rises as we move southwards, reaching 2300 m. on average.

The central section of the highlands starts from the inclination where the north section ends and extends southwards where it ends in another deep inclination. On average this section is lower in altitude than that of the north section, although some locations in the southern part of this section reach high altitudes like those of the north section. This section (Tange, 1976, 36) features rock formations of gigantic proportions and magnificent scenery.

The south section starts from the deep inclination -where the central section ends and continues until it reaches the Saudi -Yemeni frontiers. The altitude of the highlands reaches its highest point (Āl Sa'ūd, 1989, 23) in the mountain of Tahlal to the west of Abha, where the village of al-Sūda is located . It reaches 3130 m. above sea level. At the extreme south of the highlands the mountains are transformed into flat summits. This zoning can also be applied to the lowlands where each section has its counterpart .

The plateau (*al-hadba*)

To the east of the highlands the mountains are transformed gently into a plateau that covers most of the region. There is no dividing line between the highlands and the plateau. The west side of the plateau features rugged terrain, which slopes eastward gently until it vanishes into the sand dunes of Central Saudi Arabia. However the plateau is interrupted by scattered mountains. The landscape of the plateau is less dramatic than that of the highlands.

A preliminary statement of the architecture

The lowlands

In both areas the topography has influenced the climate (Galea, 1987, 247) , the economic activity of the people, and the architecture . A brief statement of this influence follows.

The climate along the Red Sea coast is hot , humid, and has low rainfall. People living along the coast are fishermen and merchants. Few of them practise agriculture. Buildings along the coast (Prochaska, 1977, 128) are of two types: round hut houses made of reed, coated on the inside with plaster. The second type of houses is of the courtyard type . Both types co-exist in many towns along the coast.

In the interior section of the lowlands, the climate features lower temperatures, less humidity, and higher rainfall , especially in summer. People (Mauger, 1993, 47) practise two activities. Some people have adapted themselves to mobile living, looking after their large flocks of sheep and goats. They live in temporary portable tents , made of palm trees and shrubs, and carried by camels and donkeys in constant travels.

The other group of people work as farmers, and cattle breeders, although some of them practise the honey trade. Buildings in this section are villages which are built in compact form . The main feature of these villages is the provision of shaded platforms, used as sitting and gathering places. This is to avoid the heat caused by sun's rays. The orientation of the houses is towards the west and the south-west to benefit from the sea breeze.



Figure I.3.

Classification of architecture according to building material

The uplands

The climate of the highlands features low winter and mild summer temperatures, with high levels of humidity and rainfall in summer and winter. The main building types of the highlands are villages and towers . According to building materials, three types of architecture (figure 3) can be defined. These are: stone architecture in zone A, composite (stone and mud) architecture in zone B, and mud architecture in zone C. In each zone further grouping is possible.

Zone A features the lowest temperatures and the highest levels of rainfall and humidity. Villages in zone A can be divided (figure 4) into three types: villages of the north section, villages of the central section and villages of the south section. Villages of the north and the south section are basically similar. They are compact in form resulting in a single dense unit and they feature dark stone colours punctuated by the white stones of quartz. Villages of the central section are easily distinguished by their tan colour and their terraced forms. All villages in all sections are dominated by at least one tower built inside or outside these villages.

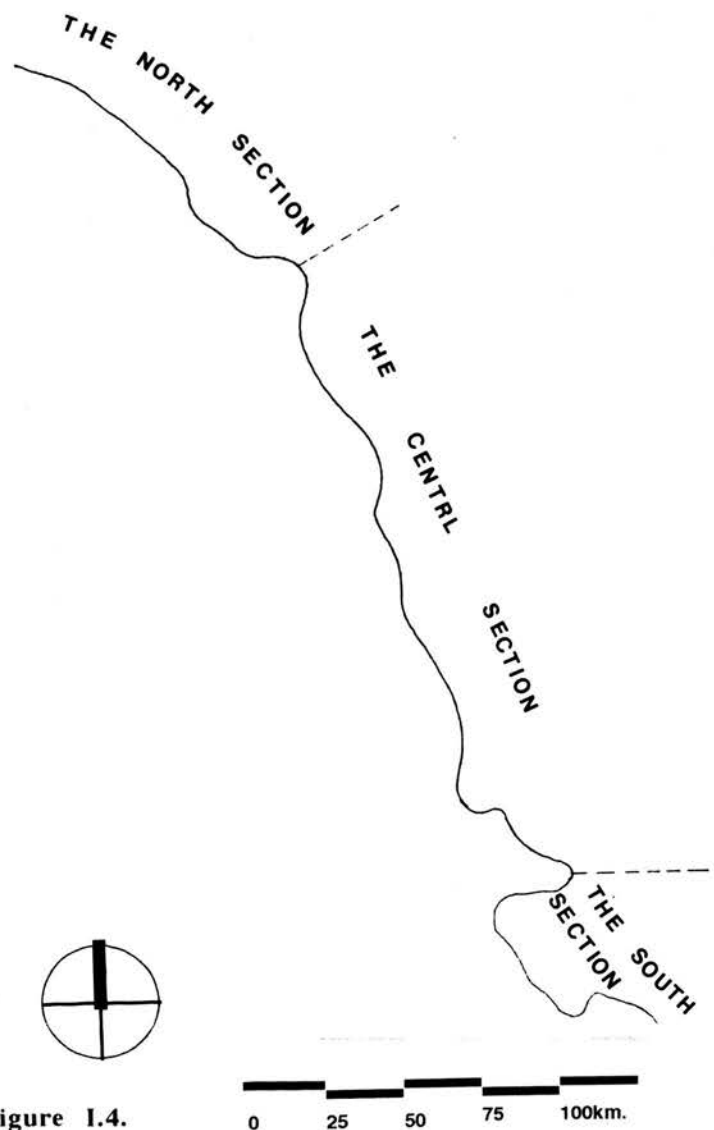


Figure 1.4.

The sub-division of zone A

According to the main external features (chart 1) , towers of zone A are divided into seven types . These are : the projecting parapet tower, the plain tower, the duct tower, the tower with a niche at the top, the tower with a slate next to the main entry point, the platform tower, and finally the round tower. These towers are used as granaries, defensive, and watch towers. Some of them serve all of these purposes. Rarely are these towers used as residential towers.

Zone B features temperatures slightly higher than those of zone A. The rainfall and humidity are also less than those of zone A. Villages of zone B are laid out in a semi-compact pattern. Usually a village is built from a number of adjacent towers of the composite type (i.e., those whose lower part is of stone and whose upper part is of mud in courses) punctuated at ground level by a pedestrian network. Above ground level the towers are physically separated. The architecture of zone B is distinguished by the stone slates (figure 5) projecting out of the mud courses to protect them from the frequent rainfall.

In zone B there are two types of towers. These are round towers and rectangular or square towers. Round towers are used as watch towers. Rectangular towers are divided into two types: thin tall towers used as granaries, and watch towers. The other type of towers is used for living. According to the layout of their roofs there are two types of these: the rectangular roof plan and the L-shaped roof plan tower.

Zone C features higher temperatures and lower humidity and rainfall as compared to those of zone A and zone B. In zone C villages are built up of towers. The towers are used for living. A typical village in this zone is built up of a number of towers that are dispersed loosely on the banks of prominent water channels. Each tower is separated from the next one . According to texture, there are two types of

mud towers. These are (figure 6) the towers where mud courses are sealed, and the towers where the mud courses are exposed. The first type is dominant in areas close to the escarpments and in the extreme south section of the highlands. The last type is dominant across the plateau in the eastern parts of the highlands.

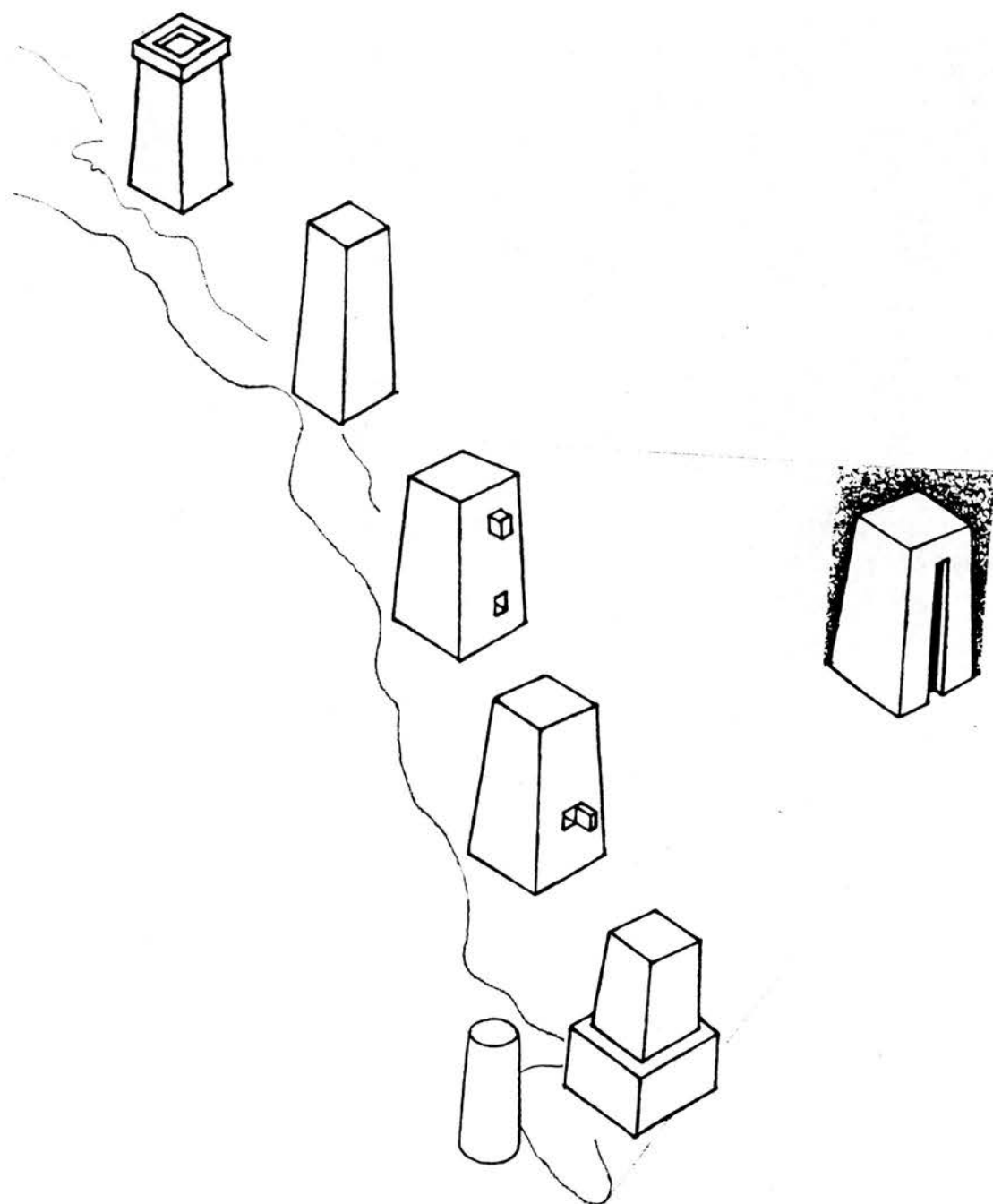
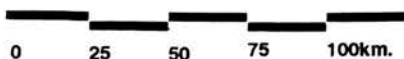


Chart I.1.

The main types of stone towers of zone A



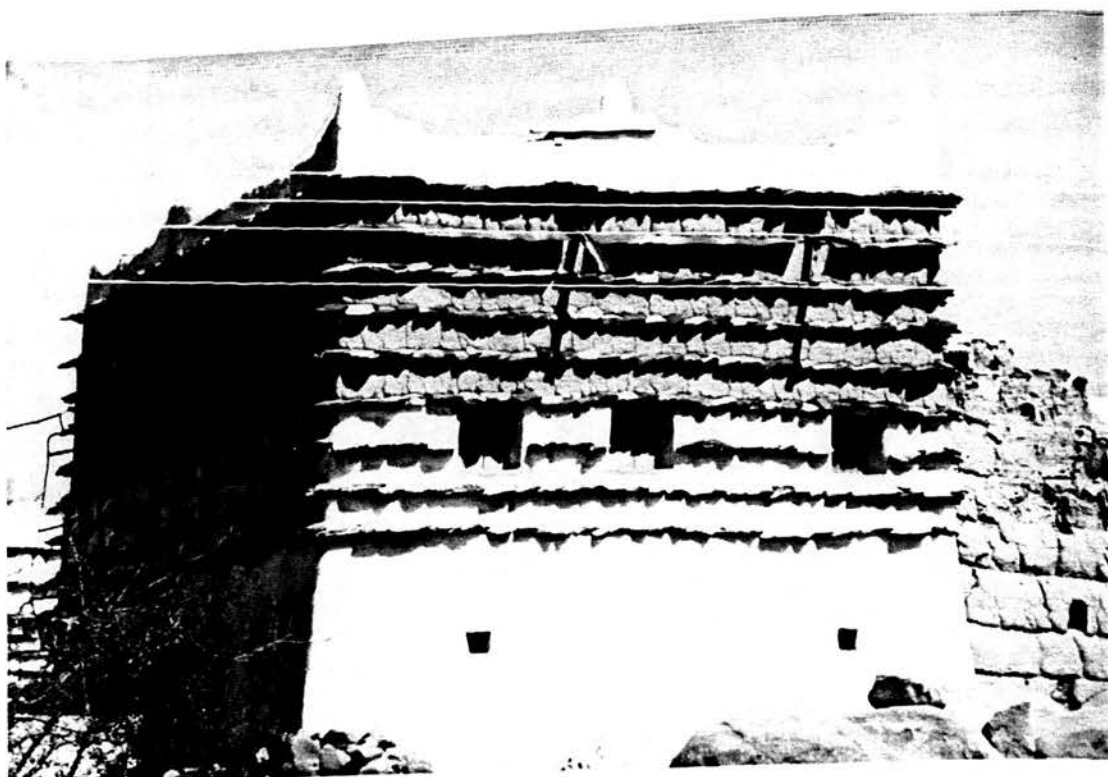


Figure 1.5.

A composite residential house in zone B.

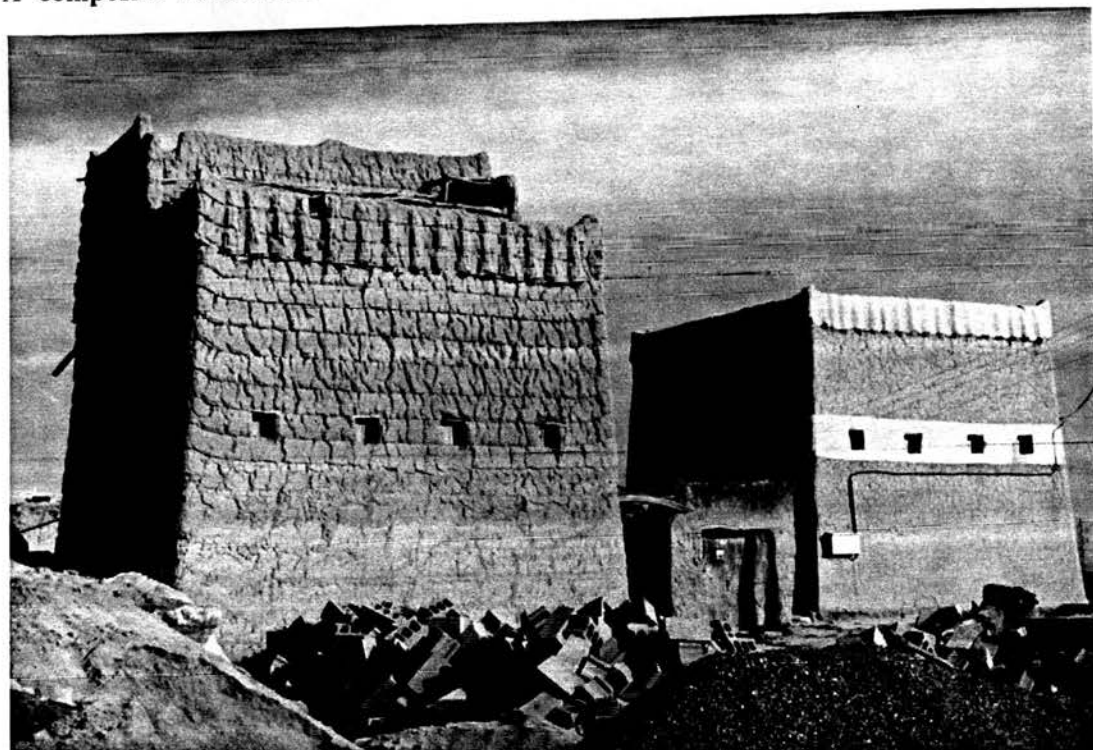


Figure 1.6.

The two types of mud towers

The architecture of the lowlands and that of the uplands is quite different. As a matter of fact the architecture of each part belongs to a different geographic entity. As the architecture of the lowlands is oriented towards the sea, it faces west and south-west, corresponding to the other side of the Red Sea. The proliferation of huts on the coast is a clear reminder of a relationship of this architecture to that of Ethiopia and the East African coast. The architecture of the uplands, on the other hand, as manifested in compact defended villages and different types of towers, belongs to that of the Arabian peninsula and South Arabia in particular where towers form the most characteristic feature of the architecture.

The plateau constitutes the largest portion of the land. But at the same time it is the least populated. The climate across the plateau is characterised by hot temperatures, and low humidity and rainfall. The architecture of the plateau features mud architecture. The towers are built in mud courses. Most of these are exposed on the facades of the towers. The courtyard type of house which is the prototype of architecture in the central part of Saudi Arabia is found in few numbers in the east frontiers of the plateau.

The highlands and the plateau are occupied by a large number of tribes and sub-tribes. Each tribe has a large number of nuclear families. Each nuclear family is centred around the oldest male member of the family. Each tribe dwells in its own territory which has to be respected by other tribes. The tribal zoning of the region is compatible with the topographic and the architectural zoning as we will see in the thesis.

The people of the highlands are permanent settlers. They practise two activities: agriculture and grazing. Grain is the essential crop of the people. Many kinds of grain are planted. In the highlands people build their villages in rugged locations to spare the

arable lands for cultivation. The people also keep large number of flocks to provide them with food, oil, and leather. Across the plateau people are also farmers. They build their villages along the prominent water channels running across the plateau, although some people have adapted to a mobile lifestyle looking after their flocks.

The aims of the research project

This introduction gives a clue to the objectives of the research in this thesis which can be summarised in three statements. Owing to the large number of towers and villages built across the highlands, to the large area which hosts these towers and villages, and to the large number of tribes and sub-tribes that live across the highlands, the classification of these towers and villages is very important. Such classification is based on the main features of these forms, and on the geographic and tribal context. Ideally, this research should establish a base map that would classify the towers and villages all across the highlands. Such a map would ideally be used as a reference tool for this research and for future studies.

On the other hand, the conglomeration of tribes and the variety of architectural styles associated with each tribe is far too complex to be reduced and simplified into a single map. The need is rather for a whole series of detailed maps, and the thesis includes these. Such maps have been created on a tribe-to tribe basis. Eventually it would be desirable to have them on a village -to -villages basis.

Stone duct towers

Owing to the large number of towers and villages and to the difference of size, form and tribal and geographic context of these towers and villages across the highlands, it is difficult to cover all of them in one piece of research, therefore one type

of tower is selected here and explored in depth. This type (figure 7) is the duct tower. Among all the towers and villages of the highlands, the duct towers are selected as case studies, for a number of reasons:

-Stone towers in general are more durable than mud or composite towers as they last longer. The study of them takes us back in history to their origin.

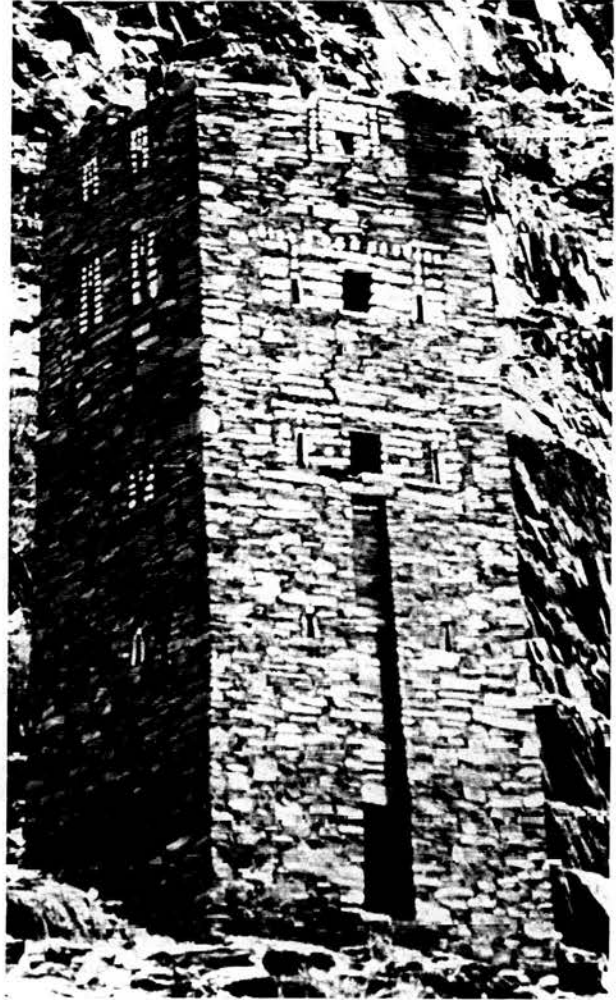


Figure I.7. A duct tower from Wādī ‘Iyā

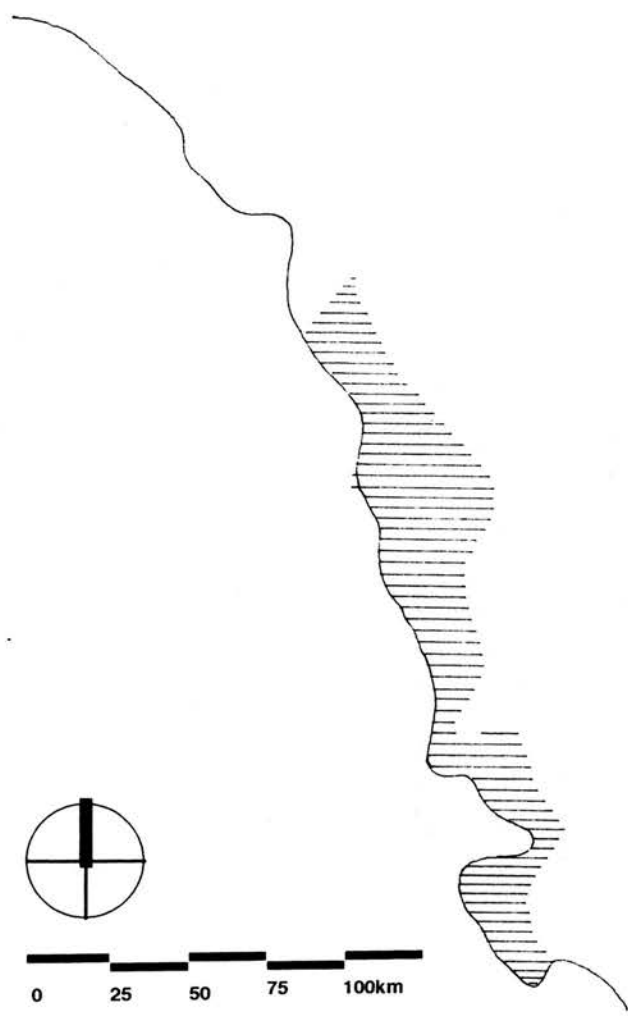
-Among the seven types of stone towers , the duct towers are the most commonly built. They are distributed over a wider area across the highlands than any other type (figure 8) . Studying these towers reveals the reason behind their wide distribution.

-Duct towers are built in different forms, sizes, and purposes; by studying them, the different features of these towers are explored.

-The duct that runs along the centre of the main facades of these towers is a distinctive feature which needs to be investigated.

Duct towers are complex in function . Some of these towers are limited to one function. Some of them serve many functions. They are different in size. Some of these towers are large, others are small. Some towers are located inside villages , while others are located outside villages . Some duct towers are owned privately, and some of them are public property. Duct towers are studied in depth here to explain their complexity . This is the second aim of the research project.

Figure 1.8. The distribution of duct towers across the highlands



This is done by selecting twelve duct towers as examples to examine the important issues which these towers raise. These towers are different in function, size, and in their physical and cultural context. They are grouped according to their function into three groups, with three towers in each group . The first group comprises grain towers, the second group defensive towers, the third group watch and retreat towers and the fourth group residential towers. These towers are built in the south and central sections of the highlands.

Methods of investigation and review of the literature

It must be admitted that very little has been written about 'Asīr. William Facey (Mauger, 1993, 10) has stated that "'Asīr remains one of the least-known parts of the globe". This has probably resulted from the rugged topography and geographic isolation of the region as well as the political difficulties of access. All these factors go far to explain the relatively thin bibliography list at the end of the thesis.

There are three sources of reference which have been used in conducting this research. The first reference involves the available literature on the architecture of the highlands. These come in four kinds. The first one involves articles written by Geoffrey King (1976, 20-29), Joseph Galea (1987,245-260) and Theodore Prochaska (1977,120-133) These writings are extremely useful to this research as they provides facts and interpretations of the architecture of the highlands.

The second work on the architecture of the highlands is found in one chapter of *The Ethnographic Atlas of 'Asīr* by Walter Dostal (1983) . The content of this chapter describes in detail a typical parapet tower in the north section of the highlands. Some villages in the south section of the highlands, which are of relevance to the research, are briefly described in other chapters of the book.

The third work is manifested in statements on the architecture. It comes in two forms. The first one involves writings of travellers. Two works are noticed here. The first one is by W. Thesiger in *The Geographic Journal* (1948, 188-200). He gives a brief description of the architecture. However the emphasis of the article is on the lowlands. The second work in this category is done by Philby. His book *Arabian Highlands* is divided into chapters and each one describes a geographic area of the region. This book is extremely helpful to this research.

The fourth type of work in this category involves statements in books of pictorial character. There are four works that belong to this category: *‘Asīr, Heritage and Civilisation* ; ed. by Wabhī al-Ḥarīrī (1987); *Abha , Bilād ‘Asīr* , ed. by Āl Sa‘ūd (1989) ;*Green Slopes and the Flowered Men of Arabia.* (1988) ; and *Undiscovered ‘Asīr* (1993). The last two are done by Thiery Mauger. These works are rich in pictures, not only on the architecture, but also on some aspects of social life of people all across the highlands.

The second reference covers different issues of the highlands not involving architecture. These writings can be grouped into three categories. The first category comprises research conducted in the region by international bodies for the government of Saudi Arabia. The most important of these were prepared by Kenzo Tange (1976, vol. 1- 6), Scan plan (1982, vols. 5, 13, 19). They provide statistical data on climate, topography, geology, etc., all of which is used as a reference tool in this research.

The second category involves scholarly writings by local geographers and historians. These writings furnish us with the necessary data on the geography of the region, as they give the names of tribes, villages, and some aspects of social life across the highlands. Some of these are: ‘Asīrī (1987), al-‘Amrī (1991), Juraish (1993) (Āl Zilfa , 1992). These references give in detail the recent political history of the highlands and the events that have resulted in incorporating the region into the Saudi realm.

The third category involves articles written in encyclopaedias. There are two articles that are used in this thesis. These are the article under the title "‘Asīr" in The Encyclopaedia of Islam, 1960 (by R. Headley), and another article under the title "Arabia" in The Encyclopaedia of World Art 1972 (by Adolf Grohmann). The last one is used in this research as we investigate the origin of some towers across the highlands.

The third source of information comes as a result of the fieldwork that I have conducted (figure 9) in different locations across the region. There are two types of such work: long term, and short term fieldwork. Long term fieldwork is the data that I have gathered along the years, as I was living within the people of ʿAsīr. There is no fixed date for such work. My involvement with the people in their formal and informal life is a principal source of material. Short term fieldwork comprises the visits that I have conducted to a number of locations across the region. These visits include field trips that I made before March 1993 when I decided to pursue this research as a Ph.D. project. The locations visited, and the dates of visiting them are illustrated in Chart 2. Each location is represented in the chart by the dominant type of towers in that location; therefore this chart reflects the stylistic variety of the towers across the highlands. The names of these locations and the dates of visiting them are as follows:

- 1- The Old Town and the villages of Ṣahrān al-Janūb, 1980, 1989, 1993.
- 2-The plain of Tanūma , 1980, 1989, 1993.
- 3-The village of Āl Khalaf, 1986, 1993.
- 4-The territory of Ṣahrān and Ghāmid , 1989.
- 5-The village of al-ʿAin in the lowlands of Ṣahrān , 1989.
- 6-The village of Rijāl Almʿa , 1990.
- 7-Wādī ʿIyā, 1991.
- 8-Wādī al-Faiḍ, 1993.
- 9-The town of al-Maḍḍa, 1993.
- 10-The village of al-ʿArīn, 1993.
- 11-The towns of Ṣabya, and Jizān, 1993.

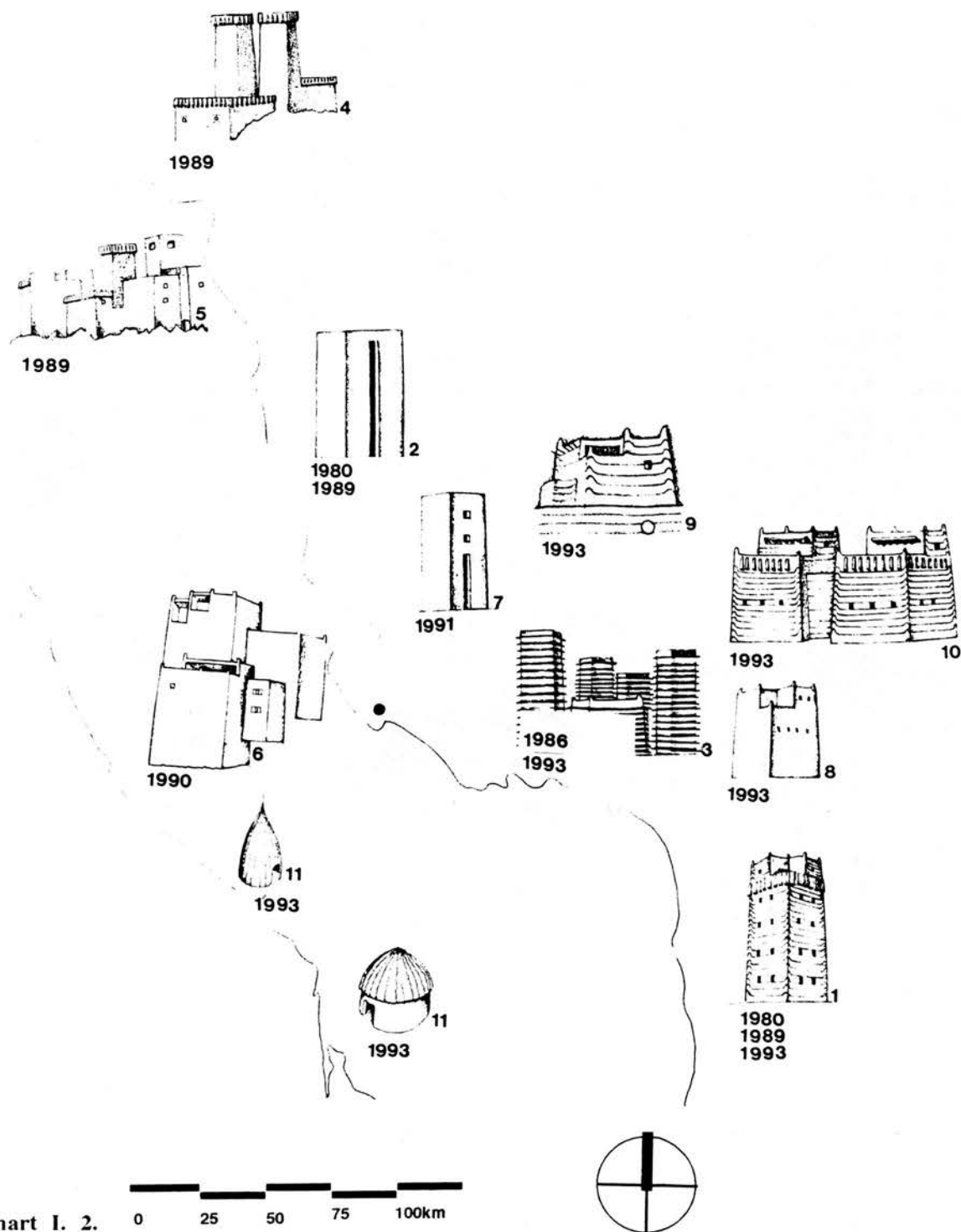


Chart I. 2.

Major locations of visits across the region

The other type of short term visit (chart 3) focused on a number of stone duct towers in the central and south section of the highlands in March and April 1994. According to their sequence in the thesis, this is a list of these towers :

- 1- The grain tower of Fāḍil.
- 2- The grain towers of Zahrā village.
- 3- The grain towers of al-ʿAuṣā village.
- 4- The defensive tower and the village of al-Makhaḍ.
- 5- The defensive tower of Āl ʿIshshān.
- 6- The defensive towers of Raida fortress.
- 7- The watch tower of al-ʿAīn village.
- 8- The watch tower of al-Malāḥa village.
- 9- The watch tower of Wādī ʿUshrān.
- 10- The residential tower of Mṣannif in the village of Ṣayyād.
- 11- The residential tower in al-ʿUkāṣ village.
- 12- The residential tower of ʿAzīz.

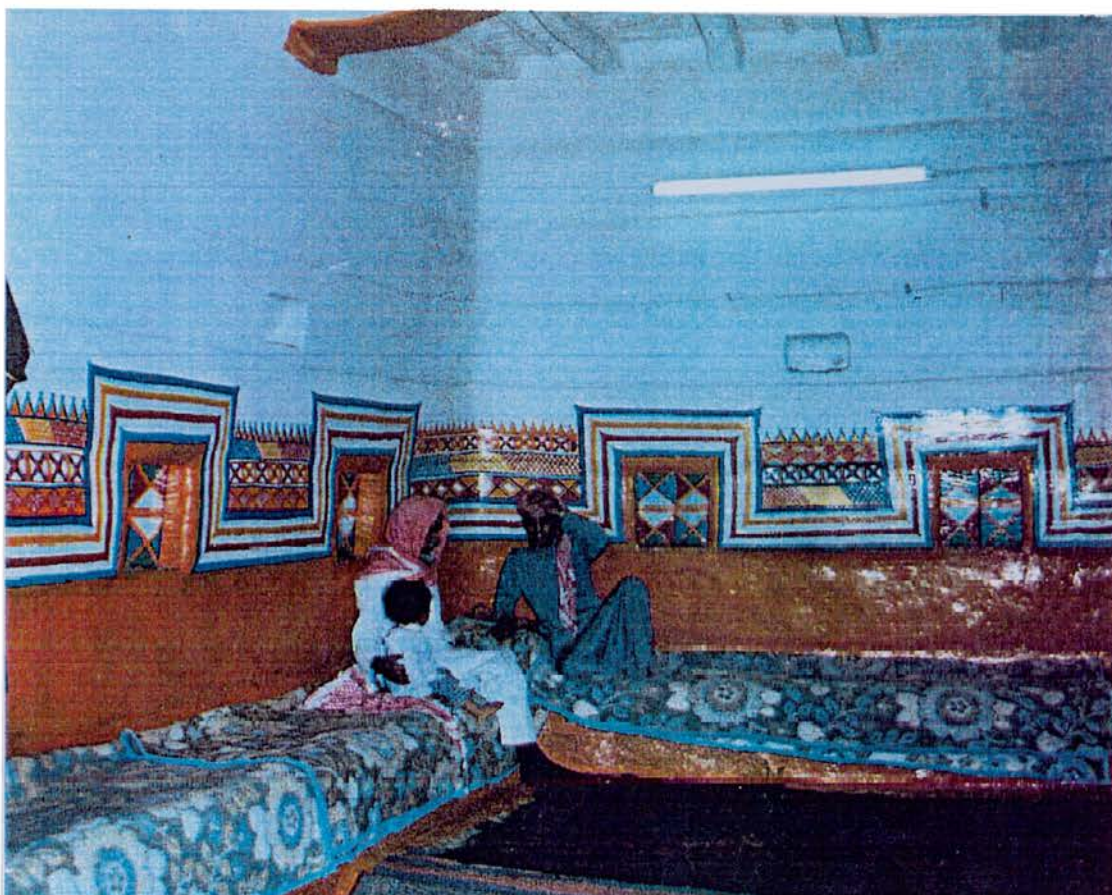


Figure 1.9.

The author in a reception room of a mud residential tower, after Dethier. 20

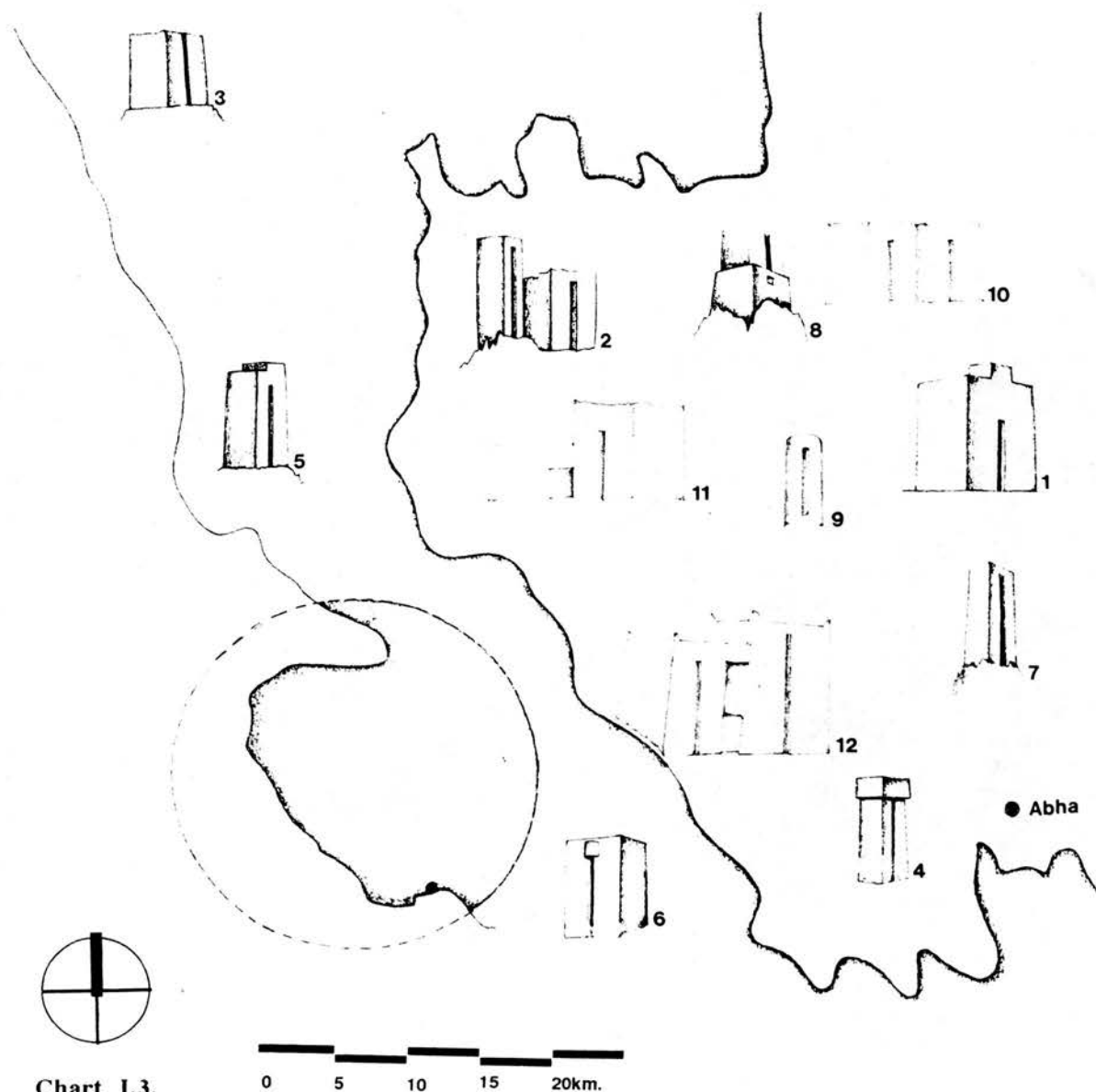


Chart 1.3.

Duct towers in the south and central sections of the highlands under focus

Although these towers were the principal targets of the field trip, other towers in neighbouring locations across the south section of the highlands were also visited.

While conducting these visits I tried to find old people to provide data that are significant to this research. Those people provide data on the usage of the towers, the time of building them, the relationship of the towers to social and economic situations,

etc. Data were recorded in a few cases on cassette tapes. But people were constrained and dissatisfied to have their conversations recorded. Therefore data were recorded in sketchbooks which I carried with me during my fieldwork. The towers were carefully studied and measured.

These towers are located outside the main towns of the highlands, and therefore it was difficult to get maps for them. This difficulty has been met by drawing sketches on site and following after a process of reconstruction from slides and photographs of the towers and their surroundings, taken when I was making my field trips. These sketches depict the most important features that are essential for the study.

The content of the thesis

The thesis is divided into two parts: introducing the native architecture of the uplands in the first part and exploring a specific type of towers, the duct tower, in the second part. The thesis is structured in a parallel framework to these objectives. Introducing the native architecture in the first part corresponds to the need to classify the building types. Describing duct towers in the second part corresponds to the need to understand these towers.

The first part is introductory. It contains four chapters. Chapter One discusses a wide range of issues and their relationship to the architecture. It describes the changes that are now taking place in the social and economic lives of the local people and gives a brief idea of how the architecture is now evolving in the light of these changes in the context of Asīr region and Saudi Arabia as a whole.

Chapter Two is about the people of the highlands. It deals with social and cultural aspects, which are essential for a genuine understanding of the architecture. The historical background, economic activities, the social structure, the social hierarchy, security requirements, etc. are all described briefly in this chapter. My attachment to the local people, the field trips that I have conducted to several locations of the region, and the writings of local geographers, are valuable sources of data which are used through this chapter.

Chapter Three is a classification of building type, across the highlands. This chapter breaks down towers and villages across the highlands into different types. Each type is described briefly highlighting its main features, and is attributed to its tribal and geographic context. This brief description is used as a background for the later chapters of the thesis.

Chapter Four introduces the natural factors across the highlands such as topography, climate, geology, plant cover, etc. and describes their effect on stone villages across the central and south sections of the highlands. The statistical data produced by Kenzo Tange is used in this chapter to interpret the forms of these villages according to the prevailing natural conditions of the highlands.

The second part of the thesis deals with duct stone towers. It is divided into five chapters. Chapter Five defines the duct which is the common feature of these towers, by studying the duct towers of chart 3, and examining the various possibilities that could have led to the invention of the duct. After discussing the various possibilities, the chapter presents the main purpose behind the invention of the duct.

Chapter Six features three duct grain towers built in different contexts. The first tower is built in total isolation from other buildings. The second tower is built within a stone-built compact village. The third tower (s) is flanking a stone-built village. After a brief investigation of the relationship of every tower to its surroundings, we move to the central idea of the chapter, which is the processes that shaped these towers, and the changes that have accompanied these processes of transformation.

Chapter Seven describes three defensive duct towers built in different contexts. The first tower is built within a defended stone-built village. The second tower is built outside a compact stone-built village. The third tower type is engaged in a fortress. The chapter investigates the relationship of these towers to their surroundings, and the adaptation of these towers to their defensive purpose, as they are involved in wider defence systems.

Chapter Eight of the thesis is devoted to the study of duct watch and retreat towers. There are three towers under focus in this chapter. All of them are built outside their villages. Two towers are square in shape, while the third tower is round. Other round towers are also included in this chapter. By studying the round towers a number of issues are introduced and are used as a background for the third part of the thesis.

Chapter Nine describes three duct residential towers in the south section of the highlands. The first tower is detached from its twin tower. The second tower is bridged at the top to its twin tower. The third tower is attached to a two-storey structure. The aim of this chapter is to understand how these towers correspond to different social and physical context. Other residential towers in the south section of the highlands are included in this chapter.

The thesis ends with a conclusion that sums up the findings of this research and recommends how the findings of the research can be put into use. Appendix A presents briefly, the relationship of early Muslim architecture in Syria and Egypt to ‘Asīr. Appendix B1 and B2 present two short lists of architectural and non-architectural terminology in different parts of ‘Asīr.

Before I conclude this introduction a brief statement must be made. Drawings are essential components of the thesis. Introducing the architecture of the region, and the large number of towers included in the research, has restricted the text from describing other issues of importance like that of construction techniques and building materials. This shortage is met by visual illustrations. Drawings are used to deliver messages that the text does not.

THE NATIVE ARCHITECTURE OF 'ASĪR IN CONTEXT

Introduction

This chapter discusses a wide range of issues relevant to the thesis and to the native architecture of the 'Asīr region. First it makes some remarks as to possible methodological approaches which might have been used in the thesis. Second, it draws a distinction between native and "imported" forms of architecture in the highlands. It then discusses the changes that are now taking place in the social and economic environment within which local people live and their influence on the local architecture. It also describes how the architecture of 'Asīr is now faring in the context of constant change in modern Saudi Arabia. However, since this issue is not at the forefront of the research done for this thesis, the present chapter limits itself to a few suggestions as to improve the interface between traditional and contemporary local architecture. The aim of this chapter is to fashion a context for subsequent chapters in which the emphasis is on villages and towers, particularly on stone duct towers.

Methodological remarks

It should first be stated explicitly -as the sub-title of thesis indicates- that not all types of vernacular 'Asīrī buildings have been discussed in this thesis. Other building types such as cave dwellings and small low-rise houses, are scattered all over the plateau, but owing to their inferior quality they have intentionally been ignored in this thesis. Mosques (thanks to Geoffrey King's *Historical Mosques of Saudi Arabia*) have indeed been briefly discussed in this thesis, but they too are not at the centre of the

investigation. Other important elements which are relevant to the thesis, such as fields, water wells, walls for demarcating or supporting fields, or alongside water channels, dikes and artificial channels, are all ignored in this thesis since they should ideally be studied by a landscape architect.

Studying the architecture of the highlands and the lowlands according to a more narrowly ecological approach is also possible. Nevertheless, it too has its problems and these are seriously exacerbated by the shortage of published research. We will see in Chapter Three that, while the material is stone throughout, in the east-west direction the change in building materials from mud to stone brought with it supplementary changes in form, while in the north-south direction the changes are minor ones in the articulation of architectural form. Similarly, in the case of topography, rainfall, humidity and planting, there are significant variations between the east-west and the north-south directions. This whole issue is better studied by environmental scientists as it requires specific scientific data and climatic, geological and topographical maps.

The ethnography of the clans distributed all over the region is complex and the current map of tribes and their distribution, as shown in the thesis, is not sufficient to establish a full context for the architecture. However the ethnographic context provided in this thesis, in the form of drawings and in the text itself, is I believe, sufficient. Nevertheless, it needs to be modified in the light of new ethnographic maps. Further ethnographic research is needed not only to study the architecture, but also for other fields of studying such as anthropology, ancient history, folk arts, and so on. To some extent these fields also shed light on vernacular architecture, these connections will be indicated where relevant.

A linguistic approach to architecture and its terminology is sometimes useful.

Across the highlands there are different dialects of Arabic, and these are as diverse as the architecture itself. In addition to the studies carried by Prochaska, other linguistic research is needed. The study of the language, especially as it relates to the techniques and context of architecture, can lead to a better understanding of that architecture. As Prochaska has concluded in his survey (1982, 109) architectural terminology is often derived from the construction process itself and from the building materials used. It also reveals that some terms used in one location of the highlands (*qaṣaba* for example) are used differently in another location. Appendix B contains some basic material on the different terms used in various parts of the highlands for architectural techniques, features and materials.

The study of classical Arab poetry reveals cosmic and topographical influences on the architecture of the ancient towers in ‘Asīr and other parts of the Arabian peninsula. It also explains the architecture in social terms. But it does not provide a clear idea of the forms and the architectural details of ancient towers. Nevertheless, classical Arab poetry does suggest that towers were fashionable across the Arabian peninsula. *Al-Iklīl* of al-Hamdānī, *Ṣubḥ al-a‘sha* of al-Qalaqshandī and *Nihāyat al-arab fī funūn al-adab* of al-Nuwairī describe with various degrees of detail different aspects of tower architecture in different parts of the Arabian Peninsula.

Accessibility as a mean of carrying out the research

This thesis is essentially based on my own long-term stay in the region and the exceptional access which I, as a local person, had to the architecture. In an extremely rugged, isolated and even inward-looking area such as ‘Asīr region, full access to the architecture and to the people is an essential prerequisite for successful research. As I

have spent most of my lifetime in this region contemplating its architecture I was able to get access to certain aspects of that architecture and to the local people that are denied to travellers from the outside world.

Unlike such travellers, who typically spend only a few days, perhaps months in ‘Asīr - a period not long enough to assemble the data vital for understanding the people and the architecture- I had the chance to observe the people and their architecture over long periods. Mastery of the language (Arabic) and certain knowledge of local dialects is essential for such investigations.

Travellers such as Philby have revealed in *Arabian Highlands* many aspects of the lives of the ‘Asīrī people. However, his work -despite its significance- did not investigate in depth the architecture of the region. For example, he made no drawings of vernacular architecture. His vivid descriptions are limited to buildings which he had come across. Other buildings (duct towers for example) are rarely described in his works. And yet his high reputation as an expert on Saudi Arabia and the dearth of published scholarship on this material have conferred a disproportionate significance on his account.

It is often the case that a traveller limits his description to a particular area. For example Thierry Mauger in *The Flowered Men and Green Slopes of Arabia* , has shown much interest in the costume of the Qaḥṭānī people of the Tihāma who fascinated him with their flowered heads and their costume. But most parts of the highlands were totally ignored in his work. Philby, on the other hand, has lavishly described his encounters with the people, in Abha for example (1976, 148). Even so, here again other important parts of the highlands were not included in his work. It is

the aim of this thesis to establish an adequate knowledge of the architecture of the highlands as a whole so far as stone duct towers-which are the most commonly built type of local architecture- are concerned.

But the necessary thorough investigation of such architecture does not come from such people. They are explorers. Their writings are personal impressions of incidents and personalities they have encountered. Scholarly writing is not, of course, the main focus of their work. It is the aim of this thesis to present these towers in detail and to discuss the forces that have led to the building of such architecture.

Risks involved in the field trips

Travelling through the extremely tribal society of 'Asīr is risky. This hinders the efforts of outside travellers to get deeper into the life of people and to explore their architecture. The native people are extremely sensitive about intrusions into their privacy. I myself have experienced such risks. These risks are of three kinds. The first kind relates to the notion that as a researcher, although I am a native of the region and familiar with its traditions, I'm invading the privacy of the people and this is resented. I have experienced this risk many times. This type of risk often disappears when the motives of the research project are explained and it is replaced by generous hospitality when people understand my intentions. But it remains the principal obstacle for any non-Saudi researcher who might wish to study this architecture in detail. So far as I am aware, therefore no serious architectural study of this architecture has ever been undertaken by western researcher.

The second kind of risk relates to the dilapidated condition of the towers and the fact that they could collapse at any time. Almost all the towers that I have visited

involve some risk of this kind. I climbed the tower of *al-ʿIshūn* under the falling stones of the staircase. I also had some fears that the tower of al-Makhaḍ village was on the verge of collapse, especially under the effect of the rain which had been falling continuously for an hour before I went inside the village. This type of risk is increased year by year because the towers are not properly maintained. In the past, regular maintenance minimised this risk.

The watch tower of al-Malāḥa village represents another type of risk., this time compounded of various psychological factors. The peculiar lifelessness of the tower creates a frightening and sinister atmosphere. Going inside the tower needed a lot of courage and I was told that no one else had been inside the tower for ten years. The local people associated this tower (and there are many others like it) with evil spirits (*jinn*) Owing to the dilapidated condition of all these towers they provide a suitable environment for vultures, snakes, and other dangers. The extremely narrow and dark entry holes add to the difficulty of getting inside these towers.

The fortress of Raida is located within the reservation of the same name. It was therefore forbidden for any outsider to obtain access to the towers within the fortress, but with the help of one of my relatives, I was able to get permission from the government to go and see the towers. However, they proved impossible to scale. The collapsed rubble prevented me from getting into these towers, and more importantly, to document the water-wells beneath them. These various risks, then, partly explain the lack of literature on the native architecture of ʿAsīr. Even the material can not be regarded as serious. They do not contain a rational account of how this architecture evolved, and of its various sub-divisions, and they are devoid of measured drawings. A few photographs by journalists (for example, in *al-Janūb* magazine) are no substitute for serious study. This thesis may fairly claim, then, to be pioneering.

Other forms of architecture not studied in the thesis

The Ottoman forts in Abha and Shi‘ār

Beside the native architecture of the highlands (i.e. the towers and villages which will be described in detail in Chapter Three) other forms architecture are found in a few locations of the highlands. The city of Abha is flanked on the north and the south sides by Ottoman forts. There are two types of these: round and square. The round forts are built on isolated hills surrounding the city. The forts of Abū Khayāl and al-Daqal are of this type. These forts are of the tower type. They are more spacious but are lower than the native towers. The plain of Shi‘ār, thirty kilometres north of Abha, controls the passage to the lowlands and is full of these towers in commanding positions on isolated hills.

The square forts are found in Shamasān and Dhira. The fort of Shamasān commands an excellent view of the city from the north as does Dhira from the south. The fort of Shamasān is built as a large rectangle with four round towers at the corners. Inside is a courtyard and quarters for the army, their artillery, horses and public gathering. For a vivid description of the second fort see Philby (1976, 154). Despite the Ottoman form of the fort, the local technology of plastering the walls with *al-qalūd* is exploited. Primitive types of arches can be seen in the construction of these forts. In the highlands of ‘Asīr. Ottoman architecture is virtually confined to these two locations, which indicates that Ottoman control over the highlands was not widespread. Indeed it appears to have been limited to the Abha area, namely the major centre of population.

The mosque of al-Ḥaraja

In the town of al-Ḥaraja (the residence of the leader of the Qaḥṭān confederation) is an unusual mosque (figure 1) . In its planning the mosque is similar to other village mosques in the highlands : it is divided into prayer room and courtyard. But the technology and the decoration indicates its foreign origin. The mosque was built using mud bricks and was veneered by an exceptionally thick layer of *al-qaḍāḍ*. The mosque is lavishly decorated. Its roof line is broken by decorative finials ending

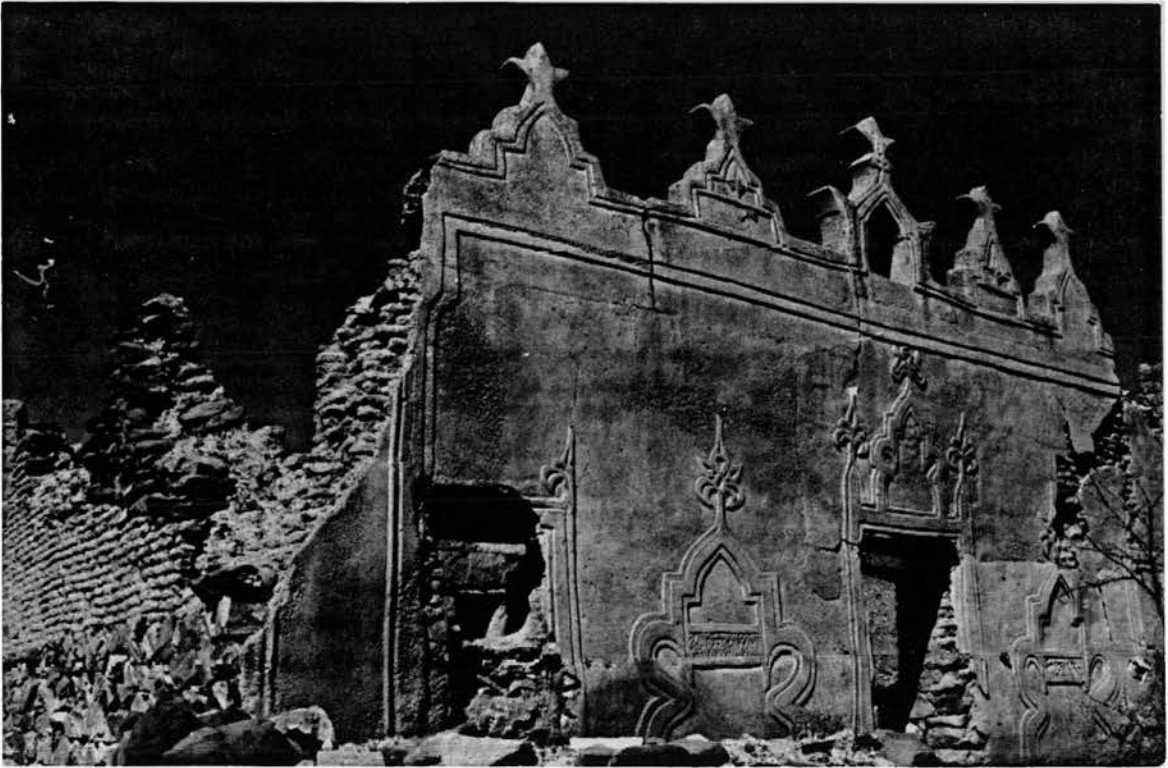


Figure 1.1.

The mosque of al-Ḥaraja, after ‘Asīrī.

up with a fleur-de-lis motif. The central finial is higher than the others and is hollowed, creating a mini-pointed arch. These finials have been framed by a thin recess compromising a linear band of the veneering material and creating depth for the composition. The main facade of the mosque was also highlighted by similar blank

archways. On both sides of the entrance proper are two elaborately profiled blind arches in low relief from the plaster. Joining the two major lobes of each arch is a band with the *shahāda* written in a rounded Kūfī style. The *miḥrāb*, the roof and the inside walls of the prayer room have collapsed, making further description impossible. However, the building technology and the decoration of the mosque are similar to those of the lowlands where al-Idrisi ruled in the early decades of this century. It is well known (Philby, 1976, 144) that the tribes of Qaḥṭān where the mosque was built were allies of al-Idrisi against the Ottomans.

The valley of Mud Brick Architecture and *A Yemen Reality* , of Salma al-Damlūjī, are full of illustrations of Yemeni towers and mosques. These two books show that mosques in some parts of Yemen are similar to this mosque in decoration, planning and in the technology. However since some parts of Yemen are very close to al-Ḥaraja and the fact that al-Idrīsī rule included some parts of Yemen, it is not surprising to see similar features of mosque architecture in ‘Asīr and Yemen.

These forms are isolated and therefore they have intentionally been ignored in the thesis.

Wādī ‘Iyā’ and its tombs

Funerary architecture in ‘Asīr is found in Wādī ‘Iyā’, a tributary of Wādī Bīsha in zone A of the highlands in the territory of Ballasmir. The unique feature of this location is in the built up tombs. There are two types of these. The first type (figure 2) has a cross-shaped plan and is used to bury a single corpse. Reaching less than two meters in height, these are found in a number of cemeteries without enclosures, dispersed on both sides of the water channel. The number of tombs is different from one cemetery



Figure 1.2.

A single built-up tomb in Wādī 'Iyā.



Figure 1.3.

A collective built-up tomb.

to another, ranging approximately from seven to twenty-five. Some of these tombs are well preserved and all of them are punctuated with white quartz in saw-tooth and linear motifs. These tombs have varying orientations. None of them faces north to Mecca, which indicates that these tombs are not for Muslim communities.

The other tomb type (figure 3) is that of chambers elevated less than one metre above the ground. Each chamber has a square plan of about three metres. The chambers are filled with corpses laid in different directions. These can be seen through the small holes punctuating the walls of these chambers. No other objects are found beside the corpses. Like the isolated tombs, these are not uniform in orientation. None of them is oriented towards Mecca. They are also decorated with linear and dotted bands of white stone.



Figure 1.4.

A typical open cemetery of built-up tombs at Wādī ʿIyā.

Figure 4 shows a typical cemetery that has both kinds of tombs dispersed irregularly along the water channel. The isolated tombs occupy the higher ground of the plain while the collective tombs are located on the lower ground of the plain. All these tombs are different in size and orientation. This suggests that they are built in a hierarchical order reflecting the social hierarchy of the dead people. The heads of the community are probably buried in the isolated tombs on the high ground while the rest of the community are probably buried in collective burial chambers on the lower ground of the plain.

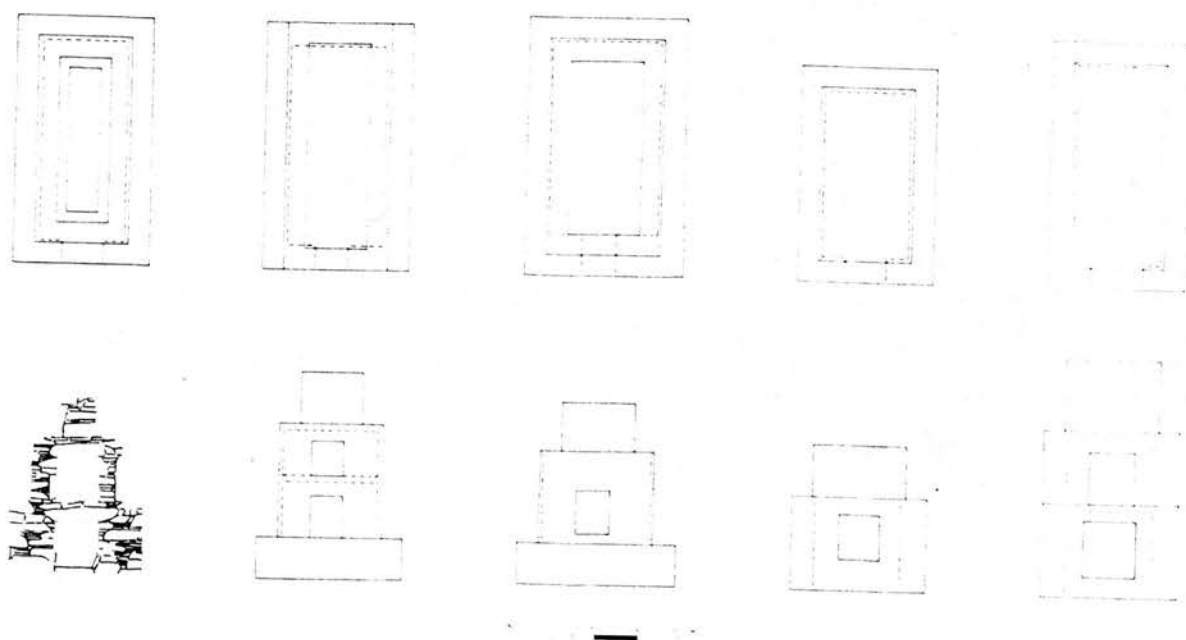


Figure 1.5.
Built-up tombs in Wādī Tirj: (top) plans ; (bottom) a section and elevations (after Hester).

Wādī Tirj, in the territory of Banī Shihr, to the north of Wādī ʿIyā, has many built-up tombs, as illustrated in figure 5. This figure shows a number of tombs. Each tomb is a recessed tower-like structure, measuring roughly 2.5 by 1.5 m by 3m. It has two or three compartments depending on the number of recesses. Each compartment is provided with a 0.5 m. hole and has more than one corpse, as can be seen from the holes. The orientation of these tombs is irregular and is not towards Mecca.

The origin of these tombs is unknown and they produce more questions than answers. Their date has so far proved impossible to determine. The local account is inadequate to explore the origin and the identity of the people. Wādī'īyā was certainly occupied by a non-Muslim community as is revealed by the built-up tombs. This tells us that the highlands of 'Asīr, perhaps owing to the local topography, has hosted (besides the native people) other communities who also, like the native people, built duct towers and maintained their non-Islamic burial practices.

Exterior and interior decoration

Generally speaking, the exterior decoration of towers and villages across the highlands is kept to a minimum. Exterior decoration of stone towers is limited to the punctuation technique of quartz against the dark stone wall ; it takes different patterns . These are described in detail in Chapter Three. In recent times the roof line of stone towers is whitewashed and concrete blocks are used at the top of these towers to create an upside down y-shaped linear parapet. The doors and windows of composite towers are painted with bright colours or whitewashed. Sometimes the mud courses containing the windows are also whitewashed or painted. This is also the case in mud towers. This simple exterior decoration is in contrast to the lavish paintings inside.

Wall painting (see figure I.9) is probably the most marked decorative feature inside these towers. To describe this technique in detail, to classify its types and to understand its meaning is time-consuming but a brief survey will be helpful. Usually the lower third of the wall is painted and the upper two-thirds of the wall are whitewashed. The lower part is divided into two halves in which the lower half is painted green, blue or orange or shades of these hues. The top half is divided into three parts. The lowest is occupied by three stripes of bright colours. These frame the windows and separate the lowest-monochrome portion of the wall from the top part of

the wall. The two other parts of this central section are also sub-divided, this time into three small areas filled with a number of motifs. The most commonly used of these are triangles and hatching. These are multiplied in different arrangements which produce different motifs. The whole composition ends with triangles pointing upward, mimicking mountains. Throughout this composition, the contrast of bright and dark colours, thin and thick stripes and the variety of triangular motifs all combine to add vibrancy and life to these paintings and to bring the wall and the space altogether in one integrated whole.

In the past, colours were made of organic materials such as plant leaves, herbs, and dried fruits. Different tones of red, for example, can be extracted from pomegranate after a process of drying and grinding. If mixed with other organic materials, new hues could be produced such as brown and yellow. Green is produced by boiling certain fruits and herbs. The tone of the colour is controlled by the amount of water. More water would produce light tones and vice versa. But in recent times paints are bought from hardware stores.

Mauger (1993, 79) has pointed out (figure 6) that the punctuation technique of using quartz in stone towers is similar to the silver jewellery used by women as rings and bangles. Triangular motifs (figure 7) similar to those of wall painting are also applied to baskets. This indicates that visual decoration in these different media is probably influenced by similar factors such as topography and craftsmanship.

The carving of doors and windows is rather different from that used for the rest of the wall. Here the saw-tooth motif is found in linear bands at the top and the lower parts of the doors and windows. It is rare that triangles or hatching are found on them.

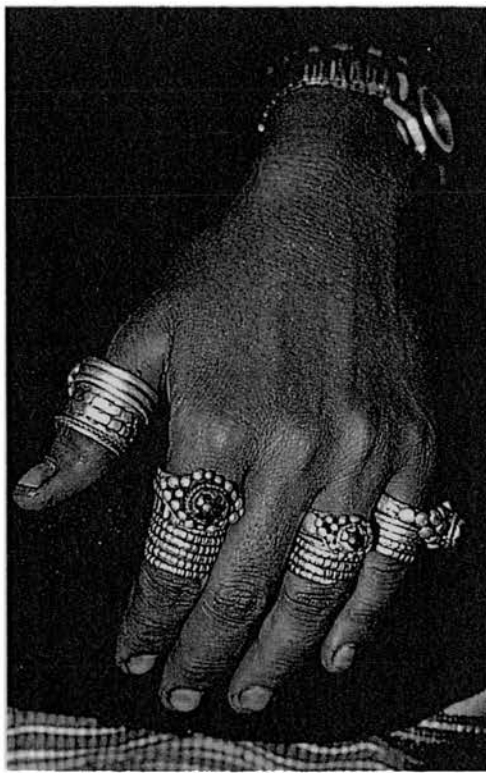
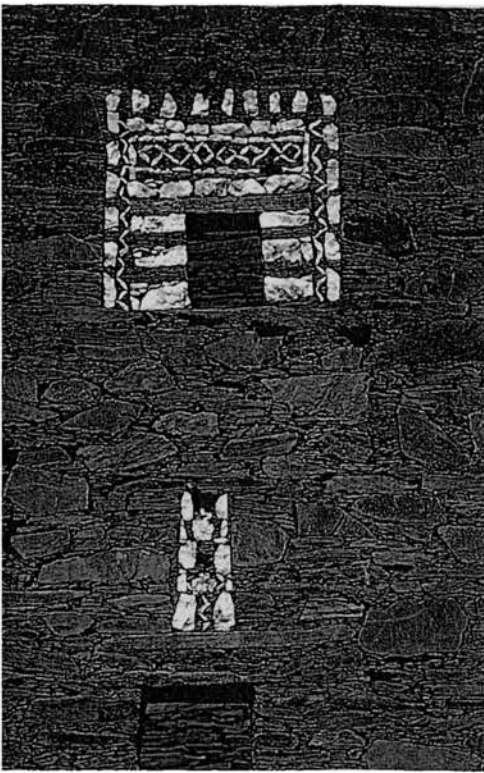


Figure1.6. Left the punctuation technique in stone walls, right rings and bangles of a lady in 'Asīr, after Mauger



Figure1.7.
A basket hanging from a basket tent, after Mauger

Therefore observation indicates that interior and exterior decoration owing to the different texture and craftsmanship (where women do the painting inside and the masons do the building outside) are significantly different. But the meaning of these systems of decoration remains elusive.

Women and their contribution to interior architecture

Women in 'Asīr (Philby, 1976, 146) enjoy a noticeable degree of freedom if compared to their positions in the strict societies of other Muslim communities. This does not mean that women move unveiled or that they violate the Islamic code of behaviour. In some villages women perform the duties of farming and breeding the animals while the men stay at home. Women also can also, in the absence of a male receive guests and provide hospitality. Mixed gatherings and dances were traditionally the norm and segregation of genders is a new arrival. As an indication of this feature there is no local terminology that denotes quarters for women (the *harmalek*) for example. The isolation of the region allowed such local traditions to thrive unabated until recently.

Women are responsible for painting and whitewashing the walls inside a building, scrubbing the floors and controlling all aspects of interior decoration and furniture arrangement. However in the past wall painting was kept in the hands of female craftsmen and whitewashing too was done by the native women.

Architecture in literature and society

There is a proverb in the highlands which says" *al-bait al-mara, wa l-mair al-dhura wa l-māl al-rijāl.*" This can be translated as " the house is the woman, the grain is

corn, and money is the adult men." This proverb succinctly explains the architecture in its social and economic context. The house is centred around women who are responsible for cleaning and beautifying their houses. Corn represents the significance of grain as the main harvest of the agricultural society of ʿAsīr. And in the perennial context of tribal rivalry, adult males are the assets of the people whereby they can defend their communities against other tribes.

The towers are a familiar motif in local poetry. The informants of the tower of Fadil told me the following story. When the tower was under construction in its final stages a pilgrim from Yemen on his way south passed by the tower. He took sand from the ground and blew it towards the tower. After seeing this, the builder followed the man on his horse and asked "why did you do this?". The man said what can be translated as "no matter how high you build the tower it will fall down." The builder went back and destroyed the sixth floor of the tower although originally he had intended to build the tower as high as possible.

This anecdote indicates how towers served metaphorically to conquer the sky. It also shows the modesty of the of the builder who did not interpret the saying of the pilgrim as motives of an insult but rather as a call to decency. Demolishing the upper floors of towers for motives of modesty is found in other locations of the highlands as we will see in Chapter VI. Praising high towers over low-rise houses is also found in Chapter Nine.

High towers have been praised in local folklore . For example there is a traditional saying:

" *qaṣr ʿālī fawq saḥḥa nūra wal-gamar fawqa yushʿi binūra fajtamʿa nūr ʿala nūr. Yāḥilail illi sakan fī daima yartajif qalba lima abṣar ghaima khāf min ghadw al-suḥūhi.*"

This saying can be translated as " a high palace (*qaṣr*) crowned by a whitewash (*nūra*) . Above it, is the shining moon, so that the moonlight and that of the whitewash have come together. Oh poor he who dwells in (*daima*) ' a dingy low-rise house on the periphery of villages beside the fields ' who gets frightened when he sees a cloud, fearing the leaking of the roof."

The saying indicates how the social status of the local people is reflected in the architecture of the last two decades. The high palace, whose roof-line is whitewashed, and which is occupied by wealthy farmers, is compared to low dingy rooms built beside the fields and occupied by craftsmen. The saying also indicates the fear of the local people of heavy rainfall, which causes mud roofs to leak.

Ancient and mediaeval Arab literature describes some legendary towers in Arabia. Al-Nuwairī (1923 ,373) states that the first structure built on earth was a *ṣarḥ* which according to Ibn Manẓūr (1956, 323) is " an isolated towering structure." He states that it was built of stone, plaster and frankincense by al-Namrud al-Akbar to protect him from God, who sent the angel Gabriel to demolish the tower with his wings. The people then dispersed all over the earth with new languages. From this statement it appears that this legendary tower was built in South Arabia as indicated by the materials used in the building of the tower, which are native to Yemen, Hadramaut and Uman. This mythical story indicates that building towers was indeed an ancient practice in South Arabia.

The cultural importance of the towers

These towers are beyond doubt the most important buildings that the people of Asir have produced over the years. They have been incorporated into the collective

memory of the people, who are indeed in some sense guided by them. The towers help the people to create mental maps for their physical environment. On the cultural level, these towers are dwelling places (tower-houses), contain the assets of people (grain towers), fortresses (defensive towers) and warning systems (watch towers). Some towers perform all of these functions. In the agrarian, introverted society of Āsīr, then, such towers are extremely significant. They are genuine indications of the type of life these people have lived.

The towers are also important in that they reflect social practices of varied significance. One practice is to call the village tower after the nuclear family that built it, so that the name of the nuclear family is kept alive after the people of the village have vanished. The nomenclature of these towers is strongly influenced by the topography in that high towers are named after high mountains.

The towers stand not only for their physical and cultural purpose as grain, defensive, watch and residential towers. They also signify the very existence of the people themselves and thus serves a monumental symbol in the lives of the people. For this reason the first thing a victorious tribe would do is to demolish the towers of the defeated tribe. This is to ensure the demoralisation of their spirit. Thus the building of a tower can commemorate a victory or can celebrate the power of a given community; and villages can compete with each other to raise the most impressive tower. This practice was especially prevalent in the early years of this century.

Changes influencing the architecture

The native architecture of Āsīr has evolved over a long period of time. The native people, with their simple methods of exploiting the land and its natural resources

did little damage to their local environment. The result was an architecture so to speak conscious of itself and in harmony with the natural environment. Water and vegetation have played a central role in shaping this architecture.

Water supply and the location of villages and towers

Water is a prerequisite of life and of the construction of all types of settlement. Villages are built in places that enjoy a secure water supply. This explains the proliferation of villages alongside the escarpment where rainfall is at its highest. Here rain-water is intercepted in cisterns, by building irrigation channels or by digging wells. These methods, described in Chapter Two, secure water for the people, their flocks and their fields.

Towers are often built beside water wells to protect the water source. The distance between the tower and its water well is related to the function of the tower. Grain towers, for example, are not necessarily built beside water wells. Nor are watch towers. Residential towers are built at different distances from water wells- first come, first served. Some defensive towers have water wells incorporated inside them. In other defensive towers artificial water channels are incorporated in the enclosures which surround them, and thus they ensure the survival of the people when they are under siege in these towers. This traditional practice is in agreement with the description of Arab historians such as al-Hmdānī (1940, 8) and al-Nuwairī (1923, 372) in their description of the ancient towers in Yemen (the tower of Ghumdān) and in the Hijaz (the towers of the Madīna)

The influence of dam construction on the built environment

In recent times, the government has adopted a policy of building water reservoirs to provide drinking water for the ever-increasing population of the cities. Owing to their high rainfall compared to other parts of Saudi Arabia, the highlands of the Ḥaṣir region contain the largest dams in the country. These dams are found both on prominent channels - such as Najrān and Jizān (in the lowlands) - and on much smaller channels such as Wādī Abha. The effect of these dams on the traditionally man-made environment has been massive.

As a result, villagers thriving on these water channels can no longer ensure the regular supply of water to their homes. The artificial water channels leading to the fields have collapsed particularly everywhere and such fields can no longer be fed from these water channels. Digging wells to reach water trapped beneath ground level has been ineffective owing to the dehydration of the water channels. Flocks are no longer able to drinking the running water of these channels. Natural vegetation alongside these channels has withered.

This partly explains the depopulation of villages. The best example of this situation is the village of al-Ḥukās described in Chapter Nine. The village was prosperous until the government built the reinforced concrete dam on the water channel. When the water supply was cut off as a result of building the dam, the local natural environment was affected and the people left the village which is now deserted except for a few settlers. Even these, buy their drinking water from mobile reservoirs and their grain from the supermarkets in local cities.

Deforestation

The native architecture of ʿAsīr is dependent on wood in the construction of floors, roofs, doors and windows. To control the exploitation of woodlands the people have created traditional laws which are discussed in Chapter Two. Such laws have proved effective. But sometimes deforestation occurs as a result of the uncontrolled use of forests for firewood and - until recent vigorous government action- for building materials, for example, the building of large towers like that of ʿAzīz, described in Chapter Nine can consume more than one thousand trees of ʿarʿar. However, in recent times the government has banned the cutting of trees; the results are promising and new generations of ʿarʿar woodlands are now growing. The reservation of Raida, where a group of towers included in this thesis are located, is a testimony to this result. In this location juniper trees, other plants and wildlife have enjoyed a revival under the protection of the law.

The disintegration of mud architecture

A notable feature of architecture in the highlands is the rare occurrence of mud watch - towers in contrast to the overwhelming number of stone and composite watch-towers. Mud watch-towers have been built in zone C of the highlands but they have collapsed with time. Moreover, while experiments whose traces are now lost might have been carried out - in mud, so that mud forms might have influenced later stone forms, this hypothesis can not yet be proved, for lack of excavation. And collapsed mud buildings leave fewer clues than do stone ones. The reason for this is that stone is more durable than mud in resisting the effects of rain and humidity. The stone slates and the foundation walls of the composite towers have proved to be effective in elongating the life-span of composite towers. Stone towers need very little maintenance. Composite towers need maintenance at the top, where the stone slates are

less effective. But mud towers constantly need repair and maintenance for the entire fabric. For this reason they are constantly plastered and painted. At least twice a year mud towers must be plastered, painted and maintained to ensure their safety. In the past hay and animal remains have been mixed with soft mud mortar to be used as a plastering material for lower courses of a tower and the area immediately around tower entrances. Nowadays this is done by using a cement mortar instead. This creates a clearer surface and discourages infestation by insects. But such cement mortar does not belong with mud architecture either aesthetically or functionally (e.g. climatically). In the longer term, cement mortar destroys walls by allowing cracks develop.

The depopulation of villages and towers

As in many other villages in Saudi Arabia, the villages of Ḥaṣīr region are gradually being depopulated. Usually the young members of families leave their villages at an early stage for the sake of education or employment and go to local cities such as Abha, Khamīs Mushait or further afield to Riyāḍ and other cities in the country. Furthermore the senior family members do not stay in their old villages but rather in newly-built stone or concrete low-rise houses not far from their old villages. Their presence in these new locations, however, is not justified by economic activities as it had been in the past. Their food is no longer produced from the fields. No longer do these people drink from water wells. They now buy water in bottles from groceries. The flocks are not guarded by the village population but by foreign labour, particularly by Egyptians or people from Eritrea. These old people thrive on money earned by their young sons who are either government employees or self-employed. In this situation grain towers are now necessarily empty if not in a state of collapse. The people who still produce grain store it loose in iron barrels inside their houses. They rarely eat it but rather leave it for their flocks.

Old people show signs of nostalgia as I experienced many times, especially when I visited the village of al-^ḤAuṣā. While touring the deserted village, the informant kept telling me of significant events in every house that he had observed in his younger years. For example, he pointed to a house in the village where he had witnessed a marriage ceremony, while in another house he had witnessed a consolation ceremony. And in the mosque he told me about the many social gatherings and disputes among the villagers that had taken place there. And while we were enjoying the view over the village and its vicinity he soon started to remember those days when the fields were lush, and green, and when flocks would enter the village on all sides at dusk, and when the people were fully engaged in farming duties. He compared these scenes with the present situation, when the village is empty, the fields are abandoned, and food is no longer brought from the fields. As an indication of the rapid change that had happened, the man told me that this visit into the village was his first in ten years. At present there is no policy for the active reversal of this trend, for example by allocating significant resources or manpower to a planned programme of regeneration.

The adaptation of contemporary architecture to changes

The reuse of the balconies of residential towers

Residential towers of all zones across the highlands have traditionally been provided with roofless balconies at the top to perform certain duties. But the situation is now changing. People now are using steel hangers supported by steel columns to cover these balconies against the rain. This feature is widespread and it is indeed a terrible blight on the local architecture of the highlands. But the social meaning behind it is more promising. In the past the people seldom used these balconies as a gathering place, because of their heavy involvement in the fields and in grazing lands. But since

nowadays people no longer practice agriculture they spend more time inside their towers. However, the rooms of the towers lack adequate lighting and ventilation. Therefore family members retreat to these balconies as gathering places which provide them with light and ventilation. Owing to the rainfall and the sunshine and also to the lack of privacy it became necessary to cover these balconies. People found steel hangers the easiest and the cheapest form of roofing these balconies as this protects them from water leakage.

The transformation of stone slates into concrete slabs

The most notable feature of the native architecture of Āsīr is perhaps the stone slates of composite towers. People have translated this feature (figure 8) in contemporary houses (and in public buildings too, as we will see below) by using concrete slabs projecting out of the walls. These are painted in light or dark brown colours to reflect the original colours of the stone slates. This practice is widespread throughout zone B of the highlands. Of course this is not convincing as these slates only serve visual purposes, unlike the original slates which protect the mud courses from collapse as a result of rainfall. But the appreciation of the local people for their native architecture which is betrayed by this practice promising. However, incorporating stone slates into contemporary local architecture poses a serious challenge for architects.

The tower as a cliché in contemporary local architecture

Another form of inspiration drawn from the local architectural traditions is expressed by building towers in concrete. This is translated in various ways in locations of the region and in different buildings. The clearest example of this feature is

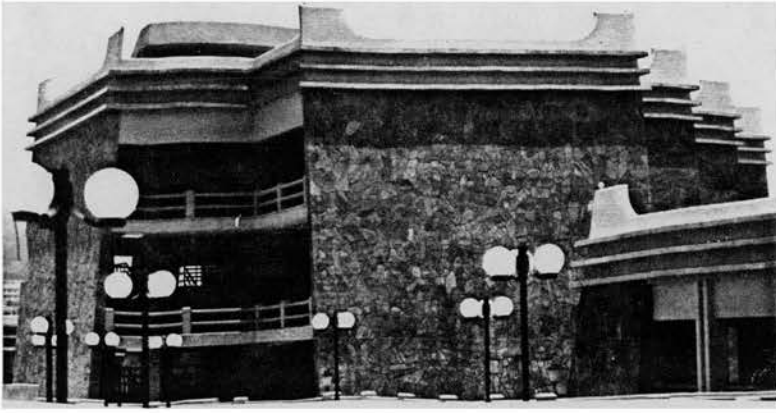


Figure 1.8.

Using concrete slabs to mimick stone slates in composite towers

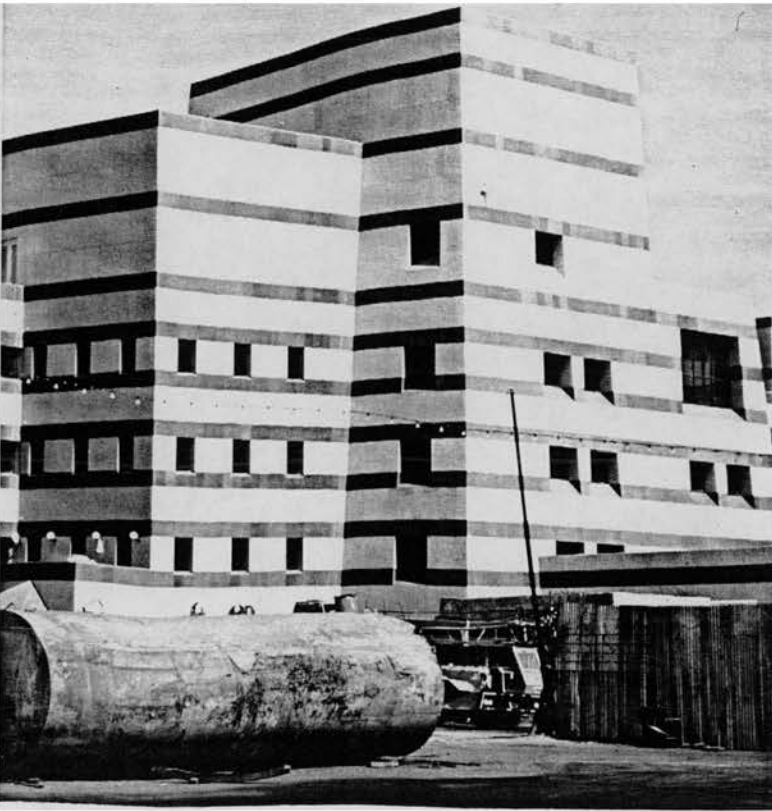


Figure 1.9.

The governor's quarters in the *imāra* building in Abha

in the building of the *imāra* of the Ḥasir region (figure 9) designed by a Riyāḍ-based group of al-Biā. Here the governor office is a tower projecting out of the office building. It mimicks a composite tower, as indicated by the stone slates which have been translated into stripes of dark marble. The governor's office, which is marked by

a large window, opens into the roofless terrace at the top of the tower - a clear reminder of balconies in traditional towers.

I believe that inspiration drawn from the native forms of architecture is legitimate and I personally advocate this type of thinking. But the resultant artefact is disappointing for a number of reasons. The massing of the building components as well as the marble stripes are ill-proportioned. The thickness of the walls indicates the desperate attempts of the architect to translate mud or stone courses into concrete walls. The craftsmanship is inadequate. Perhaps the most critical point that we should start with is the fact that simply re-building a traditional tower in reinforced concrete as a reminder of the local identity in architecture is not the right way to represent the local architectural tradition. However, the principle of mimicking traditional forms of architecture in concrete is a widespread phenomenon all over Saudi Arabia and it reflects the need for architects to think deeply and follow other approaches, so that the traditional architecture all over the country can be transformed into a viable contemporary and future environment in a more meaningful fashion.

Building conservation

Unlike other regions in the kingdom of Saudi Arabia where traditional architecture has virtually disappeared, the ⁶Asīr region, thanks to its rugged topography, abundance of stone and remoteness still preserves some of its native architecture virtually intact. But the situation is rapidly changing. With the opening of roads and the advent of the automobile, the arrival of T.V and newspapers, the local people are now experiencing rapid changes in their daily lives and consequently in the architectural forms they use and build. In this situation of rapid change, the preservation of the native architecture of ⁶Asīr for future generations is an essential task.

The need to preserve the native architecture (and in particular its towers and villages) in their original form is met with sympathy from local people. The owners of the towers which I visited in my field trips have taken different measures to preserve their towers. For example the grain tower of Āl-Mudhhib family in the village of Zahrā is provided with a stone platform at ground level to support the tower. The mud mortar in the original tower has been replaced by cement mortar. Inside, the staircase leading to the roof of the tower has also been repaired. In another example, one now scales the tower of al-Makhaḍ village by electric wire. The original leather rope has perished. Most people whom I met in my field trips, thinking that I was a government official, have asked me to help them to preserve the towers.

These measures taken individually by the local people to conserve their towers indicate that a lot has to be done to preserve this architecture. The owners of these towers can not do this by themselves. A governmental body to help these people must be established. However the main job of this body must not be limited to the conservation of these towers, but must extend also to incorporating them into the local tourism industry, a topic which will shortly be discussed.

The problems facing such a body are immense. To begin with, it can't preserve every traditional village and tower all across the highlands. Only after a careful survey of all the surviving villages and towers, and after establishing clear objectives whereby villages and towers can be preserved, can this work of conservation begin. This task will cost money, and without support from the people the government may find itself unable to carry out such a project.

In times of change, people are often not aware of the neglect with which they treat their own native architecture. The towers are now seriously neglected (figure 10)



Figure 1.10.
composite towers in collapse, after ‘Asīrī

and it will soon be too late for any preservation attempt to succeed. Therefore public awareness must be encouraged, so that people can appreciate and help to preserve their own architectural heritage. Of course this whole issue is not the prime focus of the thesis. For a brief statement on the preservation of some villages see the conclusion of the thesis.

The ‘Asīrī village in the national festival of heritage and culture of al-Jinādriyya

As an indication of respect for the traditional architecture of Saudi Arabia, the Saudi National Guard holds an annual two-week festival for art and culture in a suburb

of Riyāḍ called al-Jinādiyya. Under the direction of the Prince of ʿAsīr, a model village called the Asīrī village has been built there. This village reflects the three main zones of architecture in the highlands: stone, composite and mud architecture. Each zone is represented by a tower which reflects that type of architecture. Guides in native dress, speaking local dialects, show visitors around. The village is probably the most sizeable structure of its kind in the festival and it reflects the appreciation of the local people and the government, represented by the National Guard and the Prince of ʿAsīr for native architecture.

Unfortunately, however, like numerous examples all over the country, these towers were built in concrete and veneered by stone facing to mimic the original towers. This explains their artificial character. To that extent, they give a false impression of the architecture which they purport to depict. The duct of the stone tower of the model village is too superficial and did not serve the structural or defensive purpose which is fundamental to this type of tower. The horizontal coursing of stone slates in the composite towers is ill-proportioned. And a long critical statement could be made about the village as a whole but this thesis is not the right place for it.

Tourism and its impact on shaping the architecture of ʿAsīr

Tourism in Saudi Arabia is too complex a subject to discuss in this thesis. For the ʿAsīr region in particular, tourism is now the most important feature of the economy. However, a brief statement on this topic is relevant in the context of the thesis. With the rise in income of Saudi citizens many of them have travelled abroad as tourists. This has continued for several decades. Once the different parts of Saudi Arabia had been opened up to each other by means of transportation and media, people came to realise the uniqueness of the ʿAsīr region as a tourist attraction. This was felt also by people of the Gulf states. By degrees, then the ʿAsīr region has gradually become the major tourist

region for the Kingdom of Saudi Arabia and for the Gulf states. The distinctive natural topography, the sharp contrast of the highlands and the lowlands, the escarpment, the rock formations, the vegetation, the skyscape, the sunset, the rainbow- all are major tourist attractions.

People come to ʿAsīr mostly during the summer to enjoy the region. This has created a demand on the local people to accommodate tourists. There are three types of accommodation where tourists stay: furnished flats used mostly by families, hotels used mostly by business people and VIPs, and camping sites used most by young men. These various types of accommodation are always monitored by the government to ensure satisfactory standards.

Another type of structure which has been developed in recent years to accommodate the ever-increasing number of tourists is the "tourist village". These villages are built by business people in beautiful sites outside Abha overlooking the surrounding landscape. There are many villages in the region of this type and their number is growing. A typical village includes a number of medium-sized-fully equipped houses, a mosque, garages and security guards. Others include beside these features a grocery, recreation and T.V rooms. These villages partly fulfil the requirements of people- largely driving around in cars- to spend their vacations. But they, too, are vulnerable to criticism, although the details are beyond the scope of this thesis. For a brief note on how to improve these types of housing, see the conclusion of the thesis.

This development has led to the establishment of a governmental body in the government headquarters (the *imāra*) of Abha called "The Committee for Developing Tourism" which is headed by the Prince of ʿAsīr. This committee is the highest authority in the country responsible for advancing the tourism industry in the ʿAsīr region. 56

As a reflection of the growing momentum of the local tourism industry, the region has two projects that respond to this industry: 'Asīr National Park (figure 11) and King Fahad Cultural Centre (formerly the tourist village of al-Miftāḥa). The first covers a large area of the south section of the region, comprising the highlands and the lowlands. It is a reservation for local wildlife .It has five major locations: al-Sūda , al-Ḥabala , Dalaghān, al-Qar'ā, al-Haḍba and the visitor centre in Abha. These locations are provided with basic facilities such as picnic areas, barbecue areas, parking areas, groceries, public toilets and local mosques. The second project (figure 12) is a newly-built compound mimicking a stone defensive village in the centre of Abha designed by Ṣālih Qadaḥ, a leading local architect. It comprises art galleries, studios, exhibitions of local crafts, traditional shops, a mosque and an open theatre. These two projects are the first of their kinds in the Kingdom and they reflect the attempts of the government to promote the local tourism industry.

The two projects are laudable initiatives in attracting tourists and bringing prosperity to the area. But there is an element of what is effectively vandalism at work because the national assets are not preserved with sufficient care and the facilities and structures are not well maintained. The landscape of 'Asīr has changed in the past generation.

Problems facing the local architecture

The problems facing the naive architecture of 'Asīr, and what can be done about them is an extremely complex issue which is of course not the focus of the thesis. However, in the context of this chapter a brief discussion may be useful. Towers are rarely built nowadays across the highlands for a number of reasons. Grain is no longer produced locally, and grain towers are now empty. Rice, the main food of the people is

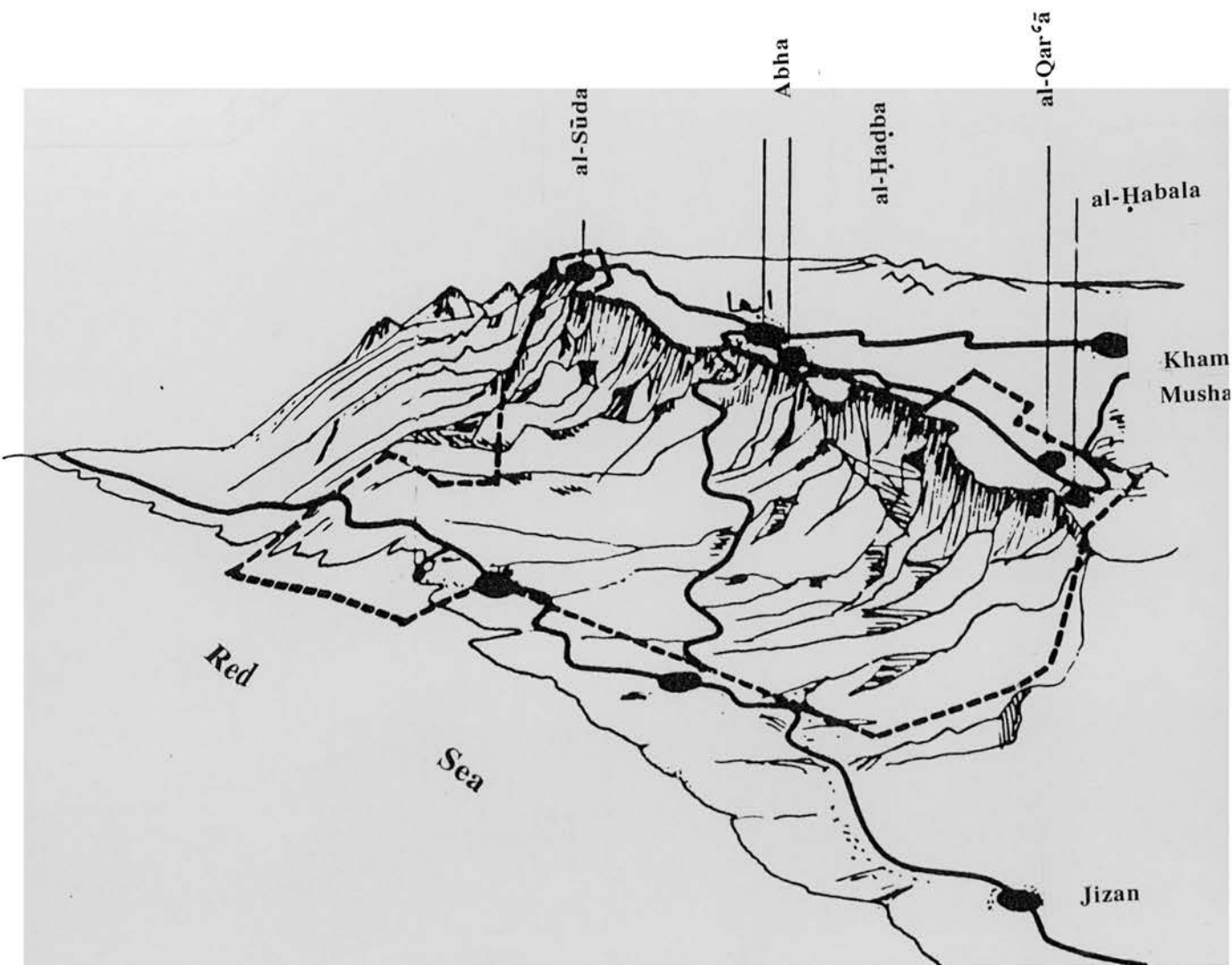


Figure 1.11.
The major locations of 'Asīr National Park, after Scan Plan team



Figure 1.12.
King Fahad Cultural Centre in Abha

imported from U.S.A , Pakistan and India. In the new situation of peace, defensive and watch towers are no longer needed. Towers are high structures which makes them intrinsically harder to build than low-rise structures. They are also difficult to climb, and moving about in them is much harder than moving about in low-rise structures. Some people, especially the elderly, find it difficult to use the staircases to reach the top floors of these towers. The towers are also impractical for contemporary living conditions. The rooms inside them are small and dark. Horizontal expansion in towers is difficult and people can't build new rooms. Vertical expansion is impractical. Thus the tower provides only small and dark rooms unsuitable for comfortable living. Most towers are not provided with lavatories and people must go outside to dispose of their waste. Towers could fall if they are built higher to accommodate new rooms.

In this situation the local people find it much more efficient to build their houses as low-rise concrete structures. Most of the problems which result from building towers are thereby solved. Large, bright and well-ventilated rooms become possible. The difficult and cumbersome vertical circulation of towers is replaced by easy horizontal movement by means of hallways and corridors in low-rise houses. New rooms can be added whenever needed. Sanitary services such as bathrooms are easily provided in these houses and the people no longer need to go outside to dispose of their waste. The new concrete structures need little maintenance and they are structurally safer. They are also cheaper to build than towers.

But of course every change brings with it new problems. The first type of problem is related to planning policy. With the economic boom in the kingdom in the past three decades, the people of 'Asīr have left their villages in droves to settle in the local cities of the region such as Abha, Khamīs Mushaiṭ and Bīsha. To accommodate the ever-increasing population in these cities, the government has adopted a grid pattern

which has proved to be ineffective for these cities. It violates the local mountainous topography. It does not allow compact forms of architecture to grow. It breaks down the social relationships of the people and the nuclear family system has disappeared. In climatic terms it is inefficient and the net result is a total lack of harmony between the local natural and cultural environments. The grid system of city planning must therefore be avoided and a new planning policy must be adopted to overcome these problems. The use of prototypical forms, governmental buildings for example, is to be avoided because it imposes an inappropriate uniformity on the diversity which naturally occurs. The decision-making process so far as whom planning is concerned must be controlled much more carefully. And the regulations generated by grid patterned housing (e.g. the spaces between houses and the degree of setback from the road) deserves closer consideration than it has received so far.

The second kind of problem is that of building technology. As a result of the rapid influx of population into these cities, the use of inadequate technology to save time and money was inevitable. The steel hangers used to roof composite towers are clear examples of this feature. In social terms, the local masons have suffered a severe setback; no longer do they practice their native jobs. In climatic terms this has resulted in poor conditions. Cold indoor temperatures , especially in winter, have resulted from using unprotected concrete walls. This is a massive problem facing local architects and active means of heating (using firewood for example) are inefficient. And in visual terms the new technology has produced buildings in striking disharmony with the local environment.

Leaking roofs are also another major technological problem for the native architecture of 'Asīr. This problem can be solved by using new technology such as water proof sheets serving as a kind of membrane in the structure itself. However the

local material, *al-qadāḍ*, which is water-proof, can be used for the same purpose. To use this material on a grand scale and to produce appropriate technology, engineers and specialists in building technology must provide their help.

The third kind of problems is related to the identity of the architecture, which is of course partly influenced by these various factors. Therefore this problem can be solved if such factors are taken into consideration. The scale of change now taking place in the region is too major to permit premature solutions aimed at reviving the local identity of the architecture. Research, Educating the people about the importance of their buildings, and getting government bodies (universities for example) and the private sector to fund research projects- these are preliminary steps for achieving this far-reaching goal.

Currently the various participants responsible for shaping the built environment (investors, planners, architects, engineers, and so on) work in isolation of each other. This is a major factor which has also contributed to the problems facing the local architecture. There should be criticism and dialogue among these various participants . Without critical , scientific and constructive dialogue these same old problems will remain unsolved.

I hope this brief statement will be understood in the context of the thesis as a whole.

SOCIAL AND CULTURAL ASPECTS OF THE PEOPLE ACROSS THE HIGHLANDS AND THEIR IMPACT ON ARCHITECTURE

Introduction

The native architecture of the highlands of 'Asīr, as manifested in towers and villages, reflects social and economic aspects that are explained in this chapter, which relies heavily on the available literature on the region and on my observation of the people over the years, including the interviews with people I made during field trips. The chapter is divided into sections. Each section deals with a different aspect of economic, social, cultural, and political significance across the highlands. A brief account of the influence of these aspects on the architecture is also presented.

The boundaries of the highlands

In the beginning it is important to define the borders of the highlands. There is a local saying (Āl Zilfa , 1982, 69) that says " *'Asīr min Zahrān ilā Zahrān wa min al-sha'f ila al-sa'f*". This saying has geographic and tribal meanings. In geographic terms it says that the land of the highlands of 'Asīr extends from the territories occupied by the tribe of Zahrān at the extreme north of the highlands, to the town of Zahrān al-Janūb, at the extreme south end of the highlands , and from the escarpment in the west to the palm trees on the east frontiers of the highlands . This definition includes the north section of the highlands, which nowadays belongs to the administrative region of al-Baha . The saying also excludes the lowlands. In this thesis the definition of the highlands is in full agreement with this saying.

Historical background

The ancient history of 'Asīr unfolds in the shadow of the ancient civilisations of Southern Arabia (al-Ghāmdī, 1983, 88) . The importance of frankincense and myrrh, native to the south-western corner of the Arabian peninsula, triggered outside contact with ancient civilisations in the Middle East. The south Arabian civilisations incorporating some parts of 'Asīr have hosted Egyptian , Greco-Roman, Ethiopian, and Persian influences, as a result of invasion or by cultural and economic contacts. The social history of ancient 'Asīr is more obscure. Only by studying the remains of the people such as rock carving, some of which are depicted by (al-Ḥarīrī, 1989, 28) the local languages as suggested by (Jurais, 1993, 156) , and wall painting, similar to those illustrated by (Mauger, 1993, 36) and most importantly architecture, can such history be revealed. This however is elaborated in Chapter Eight.

Muslim historians and geographers like al-Hamdānī as cited in (Jurais, 1993, 8) have used the term *Sarā* to describe some parts of the highlands. They divided the highlands into sections. Each section is called after the tribe that dwells in that section. Some of these sections are: Sarā 'Asīr, which means that section of the highlands occupied by the tribe of 'Asīr, Sarā al-Ḥajr (occupied by the tribe of Rijāl al-Ḥajr) , and Sara Ghamid (occupied by the tribe of Ghāmid) , and so on. The same principle is applied to the description of the lowlands, which historians and geographers have also divided into sections named after the tribes living in them.

For centuries tribal disputes have kept the people of the highlands disunited. But in the early nineteenth century some parts of the highlands were united under the leadership of Muḥammad b. 'Āmir Abū Nuqṭa al-Rufaidī (Headley, 1960, 709), who became an ally of Āl Sa'ūd in Central Arabia. The fall of al-Dir'iyya, the capital of

Āl Sa‘ūd in 1818, to the forces of Muḥammad ‘Alī Pāsha of Egypt, triggered conflict between the tribesmen of the highlands and al-Sharīf Ḥumūd in the lowlands who did not recognise the authority of Abū Nuqṭa over the highlands.

In 1823 the highlands were ruled by a chief from ‘Asīr, Sa‘īd b. Musallat (Headley, 1989, 709). And in 1833 another chief became the dominant figure in the highlands, and succeeded in driving the forces of Muḥammad ‘Alī out of the northern sections of highlands, leaving a small garrison in the lowlands. When he died in 1833 , another chief, ‘Ā id b. Mar‘ī , came to power. This man established the first dynasty in the highlands called after him.

The departure of Muḥammad ‘Alī's forces from Arabia left ‘Ā id the master of the highlands. When he died in 1856, his son Muḥammad became the ruler of the highlands. In the absence of other major powers in the region, Muḥammad b. ‘Ā id extended his power by occupying the lowlands, forcing the Ottoman viceroy to flee. This move led the Ottomans, under the leadership of Radif Pasha, to drive Muḥammad b. ‘Ā id out of the lowlands and to take refuge in the fortress of Raida , where he was put to death. For the next forty years the highlands was ruled by the Ottomans (Philby, 1976, 143), but only in name, from the city of Abha, the capital of the region.

Another revival by Ḥasan b. Muḥammad Āl ‘Ā id to restore the role of his dynasty triggered the resentment of al-Idrīsī, a Moorish saint who used his religious prestige to take control of the lowlands in the early decades of the twentieth century. Al-Idrīsī pleaded for the house of Āl Sa‘ūd (al-Qaḥṭānī, 1992, 29) , who succeeded in restoring their dynasty in Central Arabia, to intervene. As a result King ‘Abd al-‘Azīz b. Sa‘ūd sent an expedition to conquer Abha in 1920. But Ḥasan revolted again against

the Sa'ūdī rule, which provoked a mission sent by the Saudis under the leadership of Faiṣal b. 'Abd al-'Azīz in 1923, which brought the reign of Āl-'Ā'id to an end. Since then the highlands have been incorporated into the Saudi state.

Agriculture

Across the highlands, people are permanent settlers, practising two types of activities: agriculture and grazing. White corn (*dhura*), red corn (*al-ḥamri*), wheat (*burr*), barley (*sha'īr*), beans (*dijr*), and lentils (*bilsin*) are the essential crops. Fig (*tīn* or *ḥamāṭ*), peaches (*firkis* and *khawkh*), pomegranate (*rummān*), grapes (*inab*) are grown in some sections of the highlands. Dates are grown only in the eastern frontiers of the plateau.

Usually the year is divided into a number of seasons or rotations. Each rotation is called (*al-thamara*) which means "harvest time". In every rotation one type of grain is planted. White corn, red corn and barely (Philby, 1976, 361) are planted in winter as the main harvest. Beans are also planted as a secondary harvest. Wheat is the main harvest of the summer but lentil is also planted as a minor crop. However the kind of grain planted in one section of the highlands depends greatly on the available water resources, temperature, soil conditions, and on the altitude of that section. In rainy seasons, the people have five or six rotations of harvest, but in times of drought only two rotations or even one rotation per year can be afforded.

These rotations do not match each other across the different sections of highlands. It is possible to find in one section white corn as the main harvest, but in another section, at the same time, it is possible to find wheat as the main harvest. This

mismatch between the type of grain is caused by delay in rainfall or by the cold temperature known locally as *al-ḍarīb* which contributes to a late and meagre harvest. Gaps caused by the irregularity of the rainfall or temperature are filled by planting barely, which takes less time to harvest, grows at high altitudes, and adapts to all kinds of soils.

Inside the interior section of the plateau, some of the principal tribes of the region live as nomads. They have developed a mobile lifestyle and settle where water and grazing is sufficient. Their "houses" basically comprise wool tents, to adapt to mobile living. Their capital is basically large flocks of sheep and camels, and some of them have horses. They never developed agrarian communities. Their numbers are small as compared to the number of permanently settled people. It has been suggested (Āl Zilfa, 1992, 152) that their numbers reach 5 per cent of the gross population of the region.

Some clans of the interior section of the plateau have adapted to a dual system of living where they divide the year into two seasons, to comply with climatic conditions. They spend the rainy winter season of the year as villagers, planting and harvesting grain. In the other half of the year where rainfall is scarce, they live as nomads, looking after their flocks.

Irrigation

Across the highlands, there are three types of irrigation. In the highlands along the escarpment, the fields are fed by rain, which is frequent both in summer and in winter. Rain-fed irrigation is known locally as *‘uththarī* and irrigation by water wells is known as *suqa*. Water for domestic use is brought from nearby water springs, by

digging water wells , or by storing rain water in cisterns. In lower elevations east of the highlands, where the rainfall is lower than that of the highlands, the fields are fed partially by rain, but wells are dug to water the fields and homes. In the plateau, where rainfall is low, water wells are the principal source of irrigation.

Water-wells are fundamental prerequisite elements in any type of settlement, especially in the plateau . They are dug so that a certain distance is kept between any two wells (al-Najī , 1985, 21) to avoid competition over the underground water. The evolution of villages with loosely scattered housing in the eastern section of the region can be explained in relation to water-wells. When a well is dug it is surrounded by the fields and tower-houses of the people who would eventually be the owners of the territory. In places where underground water is scarce, a group of villagers must use one well to water their fields and houses. If this is denied them, the village is deserted and the villagers would seek other lands on which to settle.

Watering the fields starts by dividing them into squares. Each square is connected to the irrigation line through a lock. To water each square the lock is opened. When the square is filled with water, the water is drawn to the next square and so on. The "locks" are nothing but very small mounds of mud.

In some villages of the highlands people have created traditional water channels running alongside wadis springs to benefit from spring or running water. Each channel is called *kuḍāma*. The time and the amount of water allowed for each villager is controlled by conventions (see below) . Some of these channels run for a distance of 30 kilometres or more, as did the channel that used to reach the regional capital of the region .

Water channels are often interrupted by dry-stone walls which serve to divert water to the fields in narrow channels. These walls usually comprise large pieces of stone piled up in the waterbed of the channel and coursed in a random way. No mortar is used in the construction of these walls. The position of the wall depends on the width of the channel and the speed of running water, which is also a function of the altitude.

In the highlands where water channels are narrow and the water flow is slow, walls intercepting the water are built in a diagonal position to the direction of the water flow. As water channels travel eastward, they get wider; therefore the walls intercepting the water are built at a less acute angle. In some places where water flow is slow, the wall is perpendicular to the direction of water flow. In wide channels such as those of Bīsha and Tathlīth, deep wells are dug alongside these channels and water is moved by means of a water wheel which is pulled either by a rope manually or by cows or donkeys. The resultant water is diverted into artificial channels leading into the fields.

The regulation of water supply

Water is vital to all residents of 'Asīr. Whether brought from wells or obtained from a running channel, the access to water is regulated to guarantee fair access to every villager. In times of drought, each settler is assigned a period of time (Āl Zilfa, 1991, 135) when he can use either the well or the aqueduct to water his fields. The amount of time assigned to every villager corresponds to the amount of the available water, and to the number of fields he must water. Each farmer must adhere to his share of water and not exceed his limits, to avoid disputes with members of his community. If there is abundance of water, each farmer would get a larger amount of water depending on the size and the number of fields he must water.



Figure 2.1.

Artificial water channels to trap rain-water are essential features of the landscape

Owing to the vital need for watering the fields, people have invented artificial tributaries (figure 1) to drain rainwater into their own fields. Such channels are called *khulyān* . The surrounding vacant land is divided among the community so that the rainwater that falls on these lands is drained to the fields, to insure that each farmer gets his own share of water. But the rugged topography may hinder such equality and some fields get more water than others. This is a major source of dispute among farmers.

The processing of grain

Grain; the essential harvest, passes through a cycle of growing, harvesting, storing, and grinding, before it is finally used as bread. The first stage is that of planting (*dhary*) the seeds . This process needs two oxen or donkeys .The oxen pull a traditional plough (figure 2) which is connected to them by ropes. The oxen's movement is controlled by the farmer behind them. Usually an adult male or female

member of the family plants the seeds as the plough digs the ground. In some villages the plough is designed so that there is no need for a manual planting for the seeds, as they fall into the ground when the plough digs into the ground (Dostal, 1983, 45).

After the seeds have been planted, another process begins: to level the ground and to seal the seeds. This is done to prevent the seeds from being eaten by birds. A wide wooden panel is pulled by the ox until the seeds are completely sealed . Then it is time for watering. In high elevations, people need wait only for a few days, for rainfall to water the



Figure 2.2. Oxen being used to plough the fields before planting the seeds, after al-Ḥarīrī.

fields. In lower elevations, water is brought to the fields through a network of irrigation channels. After the water has been pulled up from the wells, it is poured from a platform next to the well into the network of irrigation channels that feed each field. All fields must be on lower contour lines from that of the platform to insure the fast flow of water.

When the plants reach a small height they become victims for a number of enemies. They can be eaten by goats or trampled by foxes in their search for food. When the plants reach a mature stage they can be stolen by tribesmen or damaged by locust (‘Asīrī, 1987, 391) and birds. Protecting the fields against birds is an essential task of farmers. From each family at least one member, and usually three or four, spend the entire daytime protecting the fields. Hail and cold also damage the plants.

People use two different methods of protecting their fields against birds. In the first method a number of scarecrows (figure 3) are placed at equal distances from each other, along the boundary of fields to scare the birds. Another method is to have a number of sound producing objects connected with ropes. If birds or locust are coming the guardsman



Figure 2.3.
Scarecrows are common elements of the landscape of fields, after al-Ḥarīrī.

occupying a watch tower within the fields, pulls the ropes to trigger the sounds and thus causes the birds and locusts to leave the field. Producing sound and throwing stones by a traditional device called *al-mundāfa* is also common.

The second process is that of threshing or *dawis*. When grain is ready for harvesting, the plants are cut in the fields by traditional sickles (*sharīm*). All the members of the family are involved in this process. Then grain is brought into a threshing ground close to the fields (figure 4) known as *jarīn* . Some people use their backyards as threshing grounds if the communal threshing yard of the village is crowded. Bulls and donkeys are used to thresh the harvest by pulling piles of stone (*al-midwasa*) until all the grain is separated from the stalks. This process is accompanied by beating the stalks with thick wooden sticks. Traditional wooden sieves

are used to get a clean harvest. The remains of this process are stored in the back yards or in rooms next to the yard as food for the animals. In locations where mud is used in architecture these remains are dried and mixed with mud to increase the durability of the buildings.



Figure 2.4.
Donkeys threshing the grain, after al-Harīfī.

The third process is that of storing (*khaṣn*) the grain . The local people say that in the past there were subterranean granaries in large numbers. However , nowadays the grain is put in traditional baskets, built from palm leaves , or is kept loose and stored in grain towers . Sometimes these towers are privately owned, but most of them are communal property.

The last process is that of grinding (*ṭaḥn*) . Almost all the people of Asir use the same method of grinding. Two circular stones which measure less than a meter in

diameter are placed one above the other. The centre of the upper stone is marked by a hole into which to pour the grain . Then the upper stone is rotated by the handle to grind the grain against the rough bottom surface of the lower stone. The powdered grain is collected along the outer edges of the lower stone . This traditional grinding system is called *al- riḥa* . Grinding is done in the houses, where each family has its own *riḥa*.

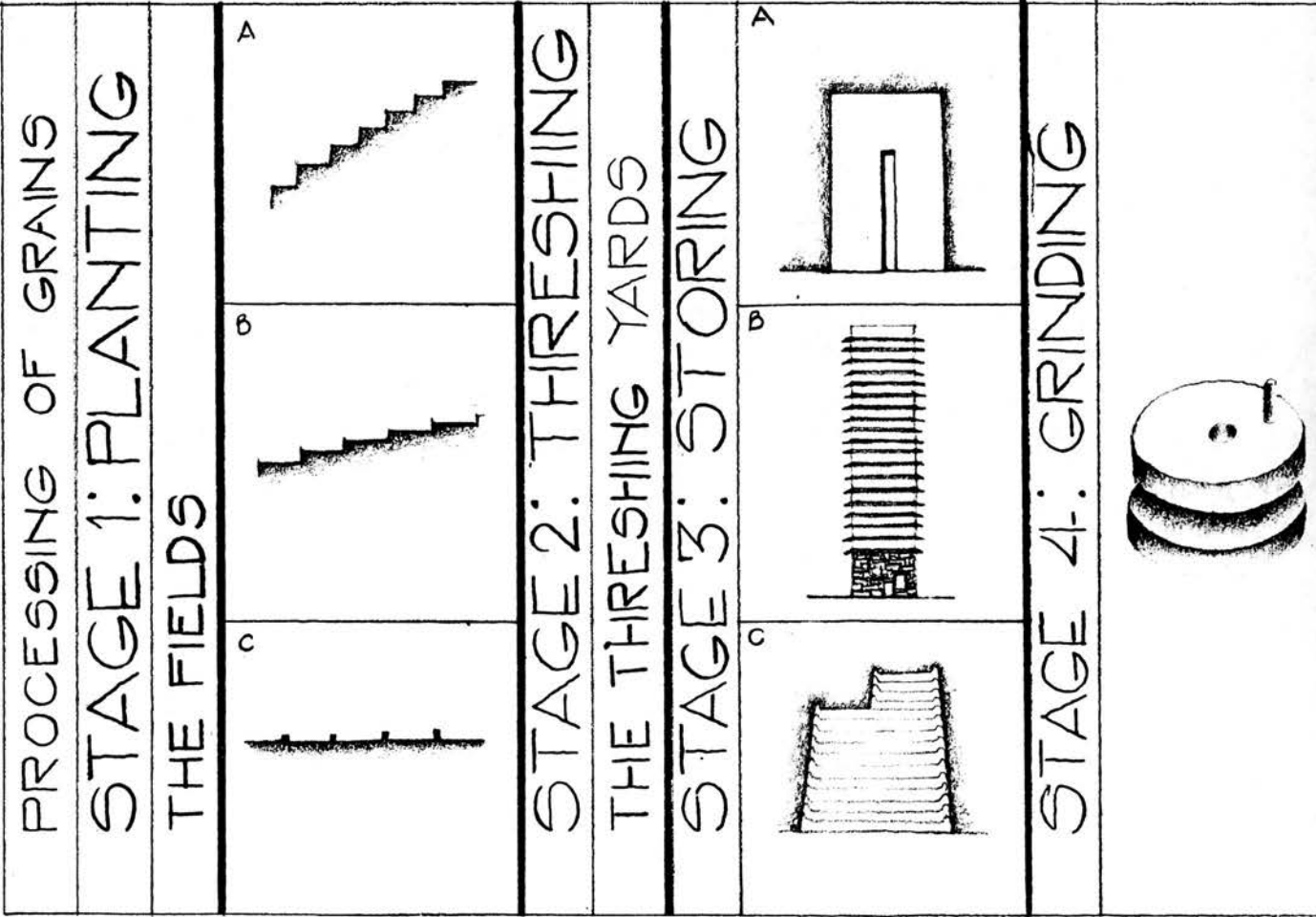


Chart 2.1.
The four stages of grain processing.

These stages are reflected monumentally in different types of apparatus in the built environment of all villages in the highlands (chart 1). The changing topography

has contributed massively to the diversity of these types of apparatus. In the highlands, the sharp slopes of the mountains have been transformed into narrow terraces supported with curvilinear stone walls. In territories adjoining the highlands, terraces take rectangular forms, becoming larger and less sharp. The retaining walls of the fields are lower. In the eastern sections , the fields are much wider, become flatter, and the retaining walls necessary to support the fields disappear.

In the highlands the grain towers are built of stone. They come in different types. To the east of the highlands, grain towers are built from mud courses on stone wall foundations and these courses are interrupted regularly by stone slates. In the eastern sections of the region, the grain towers are built in courses of sun-dried mud . These towers are a genuine reflection of the local architectural style of each area as we shall see in Chapter Three.

Grazing

It is also important to secure adequate grazing grounds. Most settlers of the highlands have large flocks of sheep and goats (Jurais, 1993, 110) and substantially fewer numbers of cows. Cows receive the most attention, as they provide butter, milk, butter, and yoghurt, as a daily food, and are used in digging the ground before planting. Few people have camels. Poultry is also uncommon in the region. Animals graze during the day-time, roam the mountains (figure 5) in the company of a herdsman. Flat sites are preferred by sheep while sharp mountains and rugged terrain are preferred by goats. Cows are fed manually with the residue of the shredding process in the backyards of the houses.

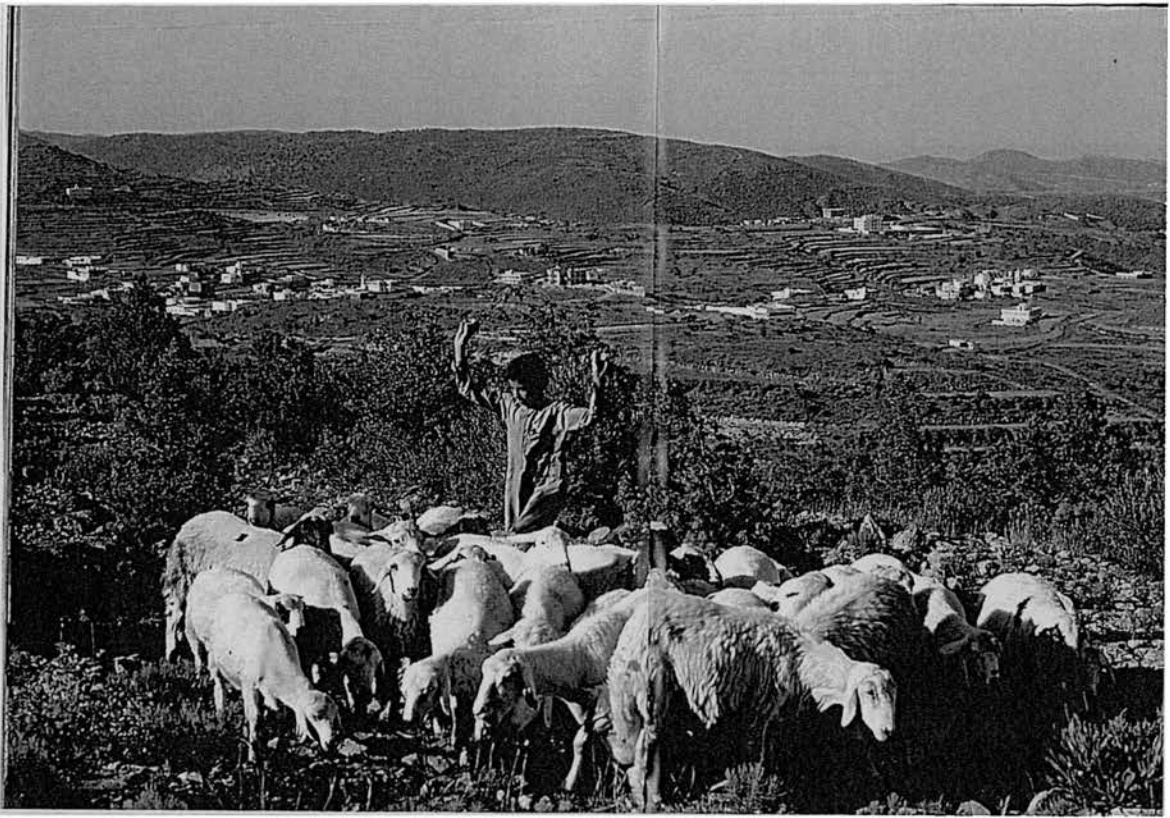


Figure 2.5.
Grazing the livestock, after Āl Saʿūd.

Everyday, grazing starts at dawn and last until dusk . Sunset is a visually striking time in the village landscape . From every direction large herds of white sheep and black goats stream into the village, coming back from their grazing lands, and each animal walks for its shelter inside the back yard of the houses. The dung of the animals is stored either inside the backyards or kept outside the house to be used as fertiliser.

To avoid the risk of theft, the walls of the yards are high and are defended along the top by a fence of stiff dried herbs and shrubs. These high walls also provide privacy for the people using the yard. In winter the herds are sheltered inside rooms built either, inside the house, or in a corner of the yard. This provides warmth for the lower floors, which also infiltrates to the upper floors and thus warms those rooms used by the occupants of the house.

Craftsmanship

Crafts across the highlands are practised not by farmers, but by other groups of people who employ their skills to make products used primarily in agriculture, and as personal belongings. Blacksmiths, textile makers, carpenters etc. are found across the region. These craftsmen are grouped according to the type of work they do, as they inherit their profession through their ancestors, a practice which has resulted in a form of monopoly of craftsmanship.

Skin tanning is widespread across the highlands. Skins of cows, goats , and sheep are used to make garments and skin canteens to be filled with water and oil and make ropes. Before using them skins must go through a process of washing, soaking, drying, ventilation, oiling, and mixing with plant leaves, and then they must be shaped into the desired form . They are punctuated with decorative motifs with sharp knives to make different forms of garments or to be used in different crafts inside or outside the house.



Figure 2.6.
(left) a woman's dress, (right) detail of a female garment, after Āl Sa'ūd. 76

Dressing is as diverse and colourful, as is architecture. There are many types of dress that can be assigned to each part of the region. Women's dresses (figure 6) highlight deep contrasts between the decorative motifs and the background . Motifs come in linear bands of yellow, orange, and red around the waist, or on the skirts, of women. The chest is elaborately embellished with similar thin bands. The head is covered by a black, or red garment striated with colourful bands. Women crown their heads with flowers. Male clothing is made of a long garment that covers the whole body. The waist is belted by leather bands. Daggers (figure 7), which function as signs of manhood, mark the centres of these belts. In the desolate terrain of the lowlands dressing is bi-sexual in that men and women wear the same dress.

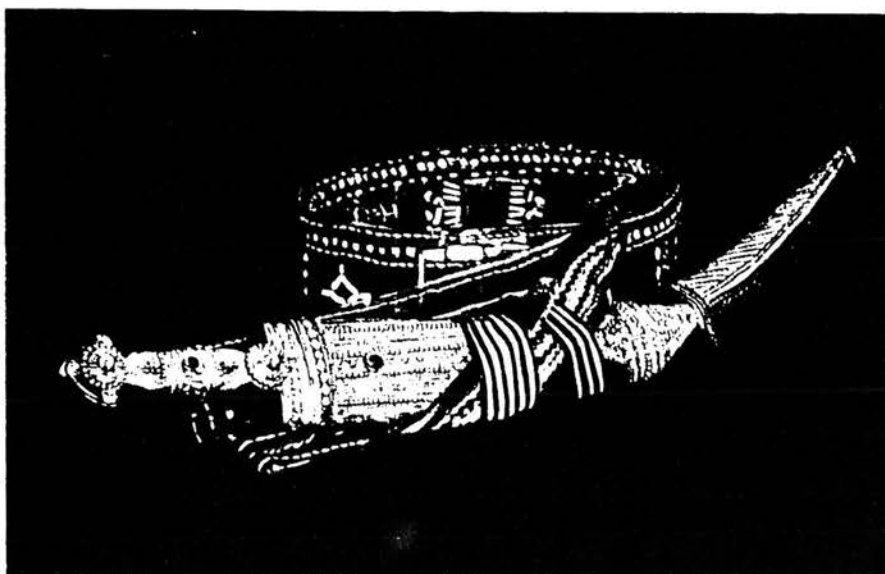


Figure 2. 7.
A silver dagger and a leather belt, after Āl Saʿūd.

Carpets can be divided into two types. The first type is made from the leaves of plants and palm trees in the eastern parts of the region. Such materials are used to produce square and round mats. Some of these mats are painted using interwoven reeds. This type of carpet is used in living rooms and in dining rooms and is made in

certain villages to be exchanged with grain. It can also be purchased from local markets. Only in recent times has this type of carpet been abandoned in favour of large carpets with a soft texture and complicated motifs.

Baskets of different sizes are heavily used across the highlands. They are made of leaves which must be cut into the desired form and undergo the process of soaking, drying, and painting before they are used for baskets. Large baskets are used to store grain in towers while small baskets (figure 8) host bread, portable objects, and personal belongings. The design of baskets differs according to the type of knots used. In ‘Asīr interwoven reeds are the most commonly used kind. But the painting of these baskets, which are dyed before being woven is attractive, as the abstract geometric forms embellish the baskets. The dominance of basketry, principally used to contain grain, over other form of crafts, such as pottery or metalwork, is a strong indication of the dominance of agriculture over other activities.



Figure 2.8.

Typical baskets to store bread and portable objects, after Āl Sa‘ūd.

Economic structures

The economic structure across the highlands is centred around grain and livestock. The idea of replacing livestock, or fields, with money has not been well developed among the people. People use grain and livestock as money. Livestock and grain are not only treated as a primary foods, but also as assets to be exchanged for other goods in weekly markets, or to save for an appropriate time such as a time of drought.

The possession of fields has acquired a social value of extreme significance. Selling or trading the fields is deemed as a disgrace, not only for the person who does so, but for the whole family. According to cultural norms, the selling of fields is forbidden. A farmer has to keep his fields until he dies. When that happens the ownership of his land is distributed among the younger members of his family (Mughrām, 1973, 110). Fields can be traded only in exceptional circumstances as a ransom for a killing. In this case the family of the person who committed the act is forced to give some fields to the family of the other party.

The norms that forbid trading of fields and livestock contributed massively to the absence of a monopoly of fields and livestock. These norms have forced people to keep their capital of fields and livestock. The development of trade in fields and livestock did not take place in 'Asīr and therefore a hierarchy of people according to economic standards did not exist.

The absence of landlords with large fields and capital is a common feature across the region. It was confirmed by the Turkish viceroy in his letter to the central government in Turkey. According to al-Qaḥṭānī (1992, 55) the statement runs:

" The wealth of the land is that of farms and livestock. Lands are divided among the people with equality. You will not find a chief having thousands of acres , nor will you find needy people."

All over the highlands, people with a large number of fields and livestock are often expected to provide assistance to the poor and the needy, and often are obliged to care for social welfare. Such commitment is costly and time-consuming. This situation has also contributed to the absence of land lordship, where wealth always meant more hardship for the people.

Often enough, people with large numbers of fields and cattle have large number of relatives .When they die their fields and livestock under possessions, are divided according to the Islamic law. This regulates inheritance to a large number of children and grand children. The breaking down of a capital into fragments has prevented the accumulation of wealth in few hands.

Land use and ownership

Across the highlands there are two types of ownership (Āl Zilfa , 1982, 83) : private and communal. Private ownership is manifested in fields, houses and their adjacent spaces, such as the rooms for sheltering animals. Public ownership is applied to lands exempted from being private. These include three basic types of lands , graded according to how they are used.

Lands where grass and shrubs grow naturally are considered public property. Such lands are often known by the local term *manāshir*. These lands are used for grazing. Lands possessing stone of good quality for construction and wood, are called *maḥājir*. These lands thus provide the materials used in construction. The wood

of these lands is also used inside the houses for fire to provide warmth. Lands bordering the fields are viewed as suppliers of rain-water .When it rains , the water of these lands is intercepted by building small channels (*khulyān*) which serve to drain the water down to the fields.

Across the highlands there is a tribal law called *ḥima* (Ālim, 1988, 14). It regulates the possession of land and how people use the territory which belongs to the villagers. Each tribe and sub-tribe declares a portion of the vacant lands as its own and this is only used by members of the tribe. The use of this land by other people who do not belong to the same tribe is considered an invasion of property, and is met with resentment .

Lands bordering tribes are also subject to norms. To avoid disputes over such lands, the parties involved may declare the land as neutral land, where no hamlet can be built, no tree can be cut, no animal can graze, and no artificial tributaries are allowed. Violation of such norms may lead to tribal wars over the land (Āl Zilfa , 1991, 153) , as has been the case with the two tribes of Shahrān and Qaḥṭān which engaged in years of conflict over a piece of land disputed between the two tribes .

Trees, especially those which are used in construction, have been subjected to norms of use to insure the fair distribution of the wood, and to create a successful environment. The cutting of trees has been restricted to a few of locations . Woods must be left green to provide food for the livestock and after the trees die, they provide firewood. Cutting trees while they are green would deprive the people of such benefits.

Commerce and markets

The highlands of 'Asīr did not develop a commercially based society. The remoteness of the region and its tribal disputes contributed significantly to this situation. Only in the peripheral towns do traders from Yemen and al-Hijāz market their goods. Such towns have been on trade routes, or on the coast such as the port of al-Qunfudha on the Red Sea, and the town of Najrān on the eastern frontiers of the region.

In the highlands some villages host weekly markets. One day of the week is set aside for this purpose and is known locally as *yawm al-sūq*. For example *Sabt Banī Bishr* is the name of a weekly market and means "Saturday of the sub-tribe of Banī Bishr". Each sub-tribe has its own market in its territory. The safety of the people and maintaining order during market day is the responsibility of the head of the sub-tribe. The location of the market must be convenient to all villagers. The market continues from dawn until dusk of market day.

Markets across the highlands have not been translated into clear defined building types. Usually a number of mobile canopies, made of shrubs or other plants supported by wood piers, are arranged in linear forms in open yards, and goods are traded under these canopies (Thesiger, 1948, 195). Goods (figure 9) are arranged so that similar goods stand beside each other in a principle similar to that adopted in supermarkets. Grain is the principal commodity in all these markets. Animal oil and honey are also traded as are weapons including rifles, swords, daggers, and many local versions of all kinds of weaponry.

These items are exchanged for grain. In the past, grain performed the role of money in these markets. At the present day, however, the transactions are in money. Grain is measured by bushel and its subdivisions. A canteen of oil, for example, would, in the past have been exchanged for a medium-sized basket of wheat. Livestock could also be traded: for example, a cow could in the past have been exchanged for five or six goats, and so on.

The significance of weekly markets is not confined to the trade in goods, but extends also to their function as social gatherings (Jurais, 1993, 118) . These markets serve to trade news, make announcements of significant issues for the communities like peace and war, recite poetry, make contracts, honour people for deeds and reprove

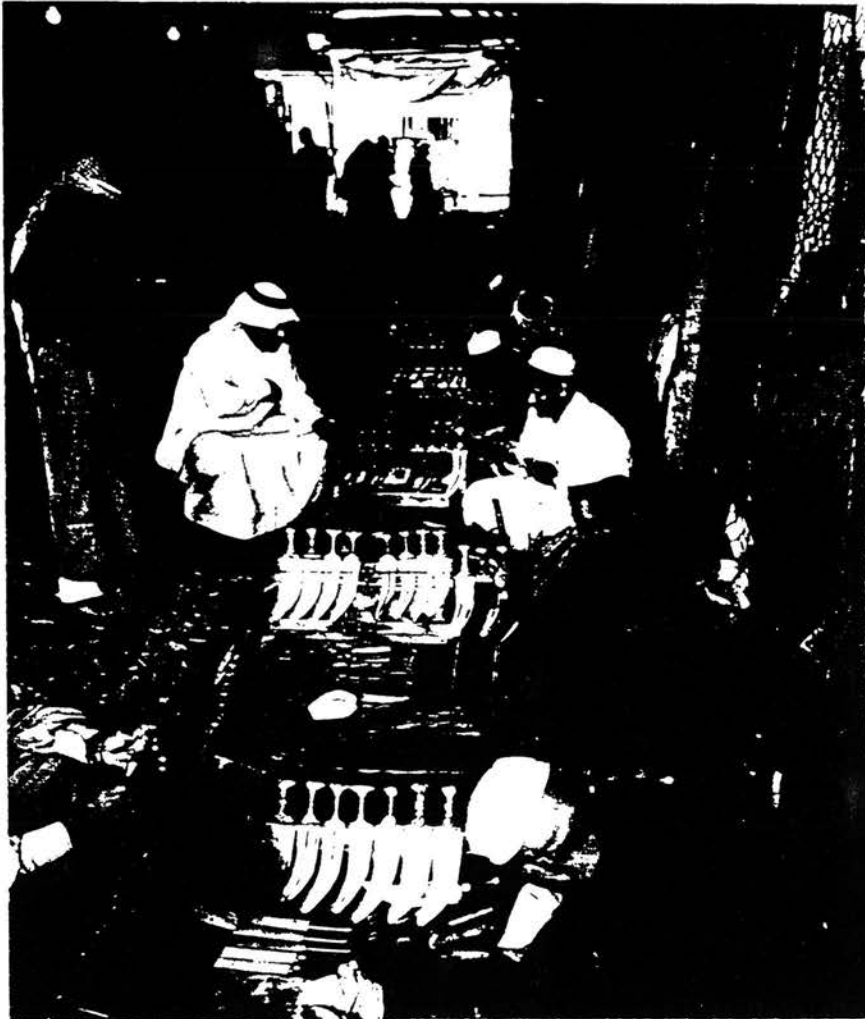


Figure 2.9.

A typical weekly market in the highlands, after al-Ḥarīrī.

others for misbehaviour , and so on. In this respect, the weekly markets of ‘Āsīr are similar to pre-Islamic market traditions. The famous *jāhiliya* market of ‘Ukāẓ held in the Ḥijāz region was famed as a social gathering place for a large number of Arabian tribes, who came to the market, not only to trade, but also to take parts in social gatherings similar to those which still persist in the weekly markets of ‘Āsīr .

Markets are often held beside giant fig trees. The reason for this is not yet clear but it is possible that giant fig trees were useful in providing shade for the people and their flocks and goods. This special kind of tree is also a natural landmark which signifies the use of these places as markets. These trees are also signs of public ownership and thus no private structures are allowed in these market locations.

The social structure

Across the highlands society is made up of a cluster of tribes distributed all over the region (figure 10). According to ‘Āsīrī (1987, 167) and Cornwallis (1976, 15) the major tribes in the highlands, from north to south are as follows: Zahrān, Ghāmid, Shumrān, Khath‘am, Balqarn, Rijāl al-Ḥajr. The last one includes the following sub-tribes: Banī ‘Amru, Banī Shihr, Ballasmir, Ballaḥmir. The tribe of Shahrān is the largest single tribe in the region. The tribe of ‘Āsīr includes the following sub-tribes: Rabī‘a wa - Rufaida , Banī Mālik, ‘Alkam, and Banī Mughaid. The tribe of Qaḥṭān includes the following sub-tribes: Rufaida , ‘Abīda , Banī Bishr, Shraif, Sanḥān, and Wad‘ah. This distribution is also applied to the lowlands where each tribe and sub-tribe mentioned above has its own population but in fewer numbers.

Each tribe can be envisaged as composed of a number of hierarchical levels. At the first level are the individuals of the entire population of a tribe. On the second level

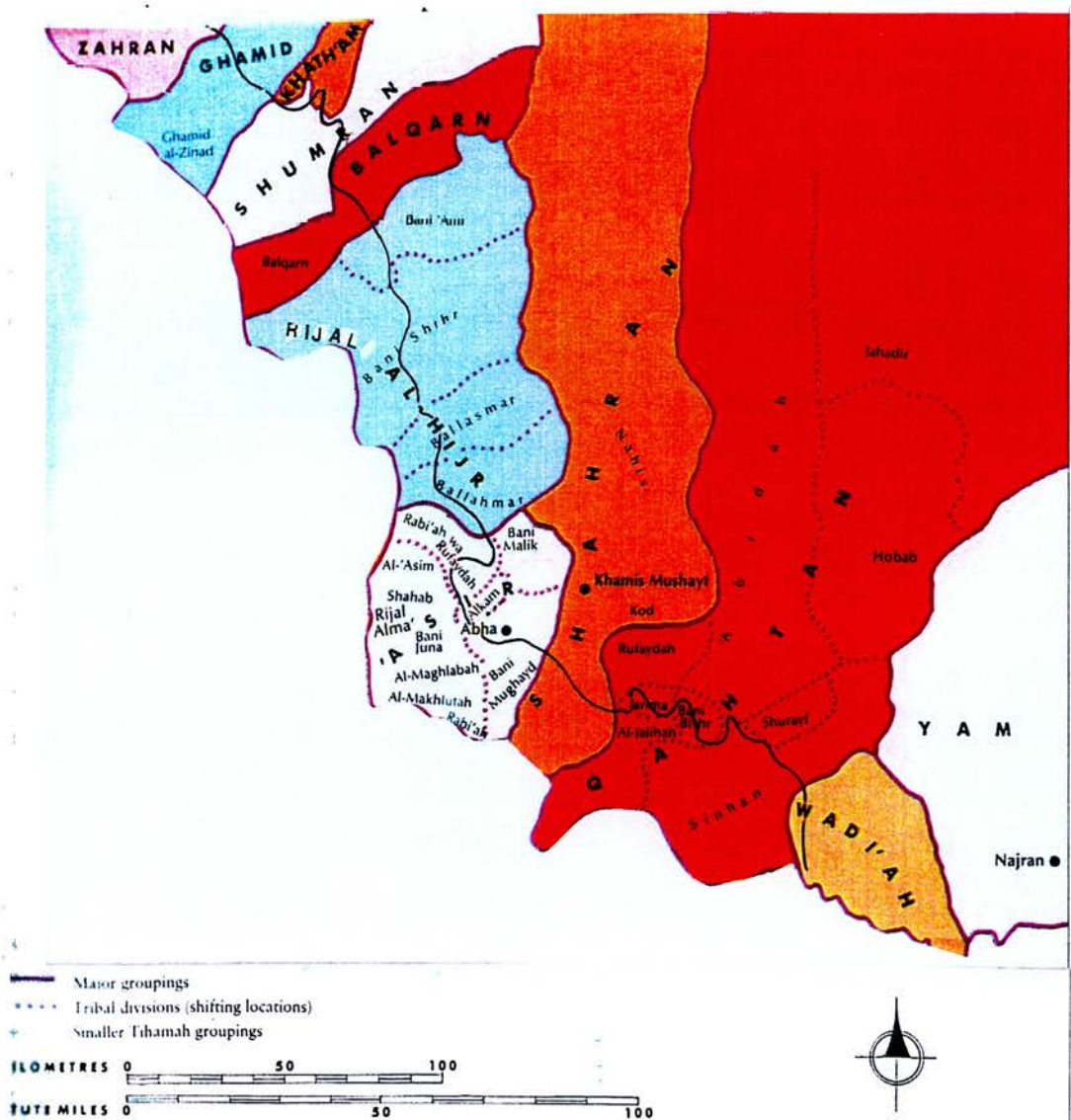


Figure 2. 10.

The principal tribes of 'Asir, after Mauger.

each individual is structured around his immediate family. This grouping increases and multiplies in several levels, to form larger nuclear families which dwell in a village that carries the name of the family. As the numbers of these groupings increases we can at certain levels define what is locally called *ashira*, *fakhdh*, and *batn*. All these levels of nuclear families are ultimately joined to form the tribe (*al-qabila*) as the single body which includes the entire population of blood-related people. At these levels, each family is centred around a senior male member who is often the oldest male

member of the family, and is surrounded by a number of children and grandchildren. The importance and responsibilities of the head of larger nuclear families rise as they rise in the hierarchy. Automatically the oldest male member of a family is the head of such a family. At higher levels the heads are elected by the male members of the community. Finally the tribe is lead by a single person elected by the heads of the nuclear families.

The number of levels is different from tribe to tribe depending on two factors: the size of the male population, and the provision of a sufficient amount of arable land and water resources to sustain agriculture. For these reasons large tribes include large numbers of nuclear families, and dwell in fertile locations. This reflects the value of land and water resources, the possession of which would entitle the tribe to long-term prosperity. The largest tribe in 'Asīr is that of Shahrān which dwells along the longest water channel of 'Asīr, known as Wadī Bīsha.

The village and tribe council

The body that practices power in villages across the highlands is the village council, locally called *majlis al-qarya*, whose members are the heads of their nuclear families (Āl Zilfa , 1991, 154) . The village council discusses local issues of great importance to the village community. The council can issue a verdict that must meet with the satisfaction of the parties involved. Each village council is headed by one member of the village, and he represents the village in the tribal council.

The tribal council (*majlis al-qabīla*) is formed by a number of heads of village councils, whose members are elected according to a specific system of values. The candidate must be a farmer of the community. He must also be wise; he should

have experience in solving problems among his fellow-tribesmen. The tribal council discusses issues of significance to the tribe such as the ownership of the lands bordering tribal lands. The tribal council is headed by the chief of the tribe who also is elected on similar terms. The chief has more power than the members of the council. He has the power to intervene in issues that have not been settled by the village council. His power is not absolute, but must comply with the interests of the people.

This hierarchy has not been translated into architectural terms. Meetings and discussions of such issues take place in the house of one of the members, in the yards of the village, in the village mosque, or in the weekly market, where things are discussed in public and where the people can participate in and contribute to the discussion.

Rules are not formulated unless they are necessary. The council is an executive council. Legislation power is derived from the *Qur'an* and the *ḥadīth*. In cases of precedence the heads of tribe discuss the situation and pass it to the chief of the tribe, who has the final verdict.

Transfer of power based on public consensus ('Asīrī, 1987, 108) has happened in the tribe of 'Asīr. The people elected their chief on the grounds of his character. After his death power was transferred, also by election, to another man who did not belong to the immediate family of his predecessor. After the death of this chief, power was assumed by his sons and from that time, there has developed the dynasty of Āl 'Ā'id, named after the grandfather who had been elected on the basis of his deeds.

In recent times power has been inherited, but in earlier periods heading the people was not regarded as a privilege but as a duty (Āl Zilfa , 1991, 15), so people did not covet such a task. When the region was incorporated into entity of Saudi Arabia, new political, economic, and social forces led to a monopoly of posts among prominent families. Currently the power previously held by tribal chieftains has been taken by the state, but it is still a landmark of political and social prestige. All the posts of tribal chieftains in the region are kept within recognised families.

The social hierarchy

All forms of craftsmanship in the highlands of Asir are regarded as being inferior to agriculture (Philby, 1976, 170) and (Āsīrī, 1986, 406) . The natives are the people who belong to a certain tribe, and practice agriculture. They call themselves *aṣl* . The word means " the native " or " original". Craftsmen are known as *ṭaraf* . The word means " edge" or " end" of something. Craftsmen do not belong to the tribe and therefore can not acquire the names of the tribes of their communities.

The reason for this distinction can be understood in socio-economic terms. Craftsmen are people of unknown ethnic origin, who immigrate and settle within the lands of the natives. To be a member of his new community, the craftsman must not practice agriculture, and consequently would not possess fields, but he can earn his living by practising craftsmanship. In the agricultural society of Āsīr the absence of developed craftsmanship can easily be made by good new comers.

The value of the land has, through generations, acquired a status of undisputed significance (Āl Zilfa, 1991, 155). In a crowded society which thrives on limited resources of arable lands, such as that of the highlands of Āsīr, the land occupies a

significant meaning as the primary source of survival. Owning land is a matter of life and death. Individual or group immigrants pose a threat to the permanent settlers if they are permitted to practice agriculture. Therefore they must not be allowed to conquer lands, which may result in a competition over land, and may lead ultimately the natives to desert their villages. But immigrants can be provided with shelter and security, as long as they abide by the norms of the community.

Farmers and craftsmen do not inter-marry. If a farmer commits such an act he is met by the resentment of his community. The man who does so must leave the village. This custom also is to keep craftsmen from possessing land. If craftsmen were allowed to enter into blood relationships with farmers through marriage, this would entitle them to own land and practice agriculture.

Craftsmen (al-Bishrī, 1992, 63) are named according to their work. A short list of the most common types of work and the names given to its practitioners might include:

bulḥuṭ : a coffee servant, a story and joke teller

faiḍī : a drummer

ḥaddād : a copper and iron maker

ḥāik : carpet, rug, and wool maker

kharrāz : a jewellery maker

maḥḥaḥ : a salt merchant

mbarrim : an oven maker

najjār : a carpenter

ṣānī : a smith and metal worker

Owing to the prohibition against craftsmen owning land, they do not build their own houses, but rather live in low-rise houses, built by the native people for agrarian uses on the peripheries of villages but subsequently deserted. In other villages craftsmen live beside the village mosque in their own tents, which they bring with them. Craftsmen stay in a village as long as they are needed; for example at harvest time they can be paid in grain for helping the natives to harvest the fields. The traditional distinction drawn between the native people and the craftsmen is viewed with disfavour by the government. However, old traditions die hard and some forms of distinction, such as the prohibition of intermarriage between the natives and craftsmen are still common.

Security and its impact on the built form

The quest for security has motivated people to dwell close to each other, in compact villages, not only to enforce the feeling of security for the whole population, where each dweller is surrounded by people that descend from the same ancestor, but also to provide norms and traditions, where the community must provide for the security of its members, as long as the individuals are loyal to the norms of the tribe, which in the end contribute to safe settlements.

High locations have always been favoured for villages. They provide security in a number of ways. Higher locations are difficult of access for invaders. They give the villagers the advantage over the attackers coming from lower grounds, since defending from above is much more effective than attacking from below. They also provide excellent surveillance points.

Across the highlands the people are farmers. Their dependence on agriculture has affected the built environment in a number of ways. Owing to the rugged topography of the land, plains, flat locations and arable lands have always been set apart as fields. This situation has pushed the built-up villages into locations not favoured for agricultural use, and eventually to the high grounds. This is a fundamental feature of all villages across the highlands.

Older villages always occupy the higher ground. Gradually with an easing of tribal rivalry, achieved by the power of the state, the people descended to lower ground closer to their fields. Compact villages ceased to exist, although the nuclear family system has remained the basic form of social structure.

Other forms of cultural significance

Marriage as a form of cultural significance has also contributed to a more secure social system. Marriage is not merely a sacred relationship between two people, but a powerful means to secure the social structure. Marriage among relatives is favoured to ensure the alliance of relatives. But marriage from families outside the village community is also common since it brings families from outside the village, into alliance, not just with two families involved, but also with the entire nuclear families of both sides which are thus brought together. This results in stronger social relationships among people.

Marriage involves two families of the same rank. Marriage between the natives (the farmers) and the immigrants (the craftsmen) is unthinkable. In the course of the ceremony day the groom must be accompanied by a large number of his relatives. When they reach the main yard of the village of their host, they form a line occupied

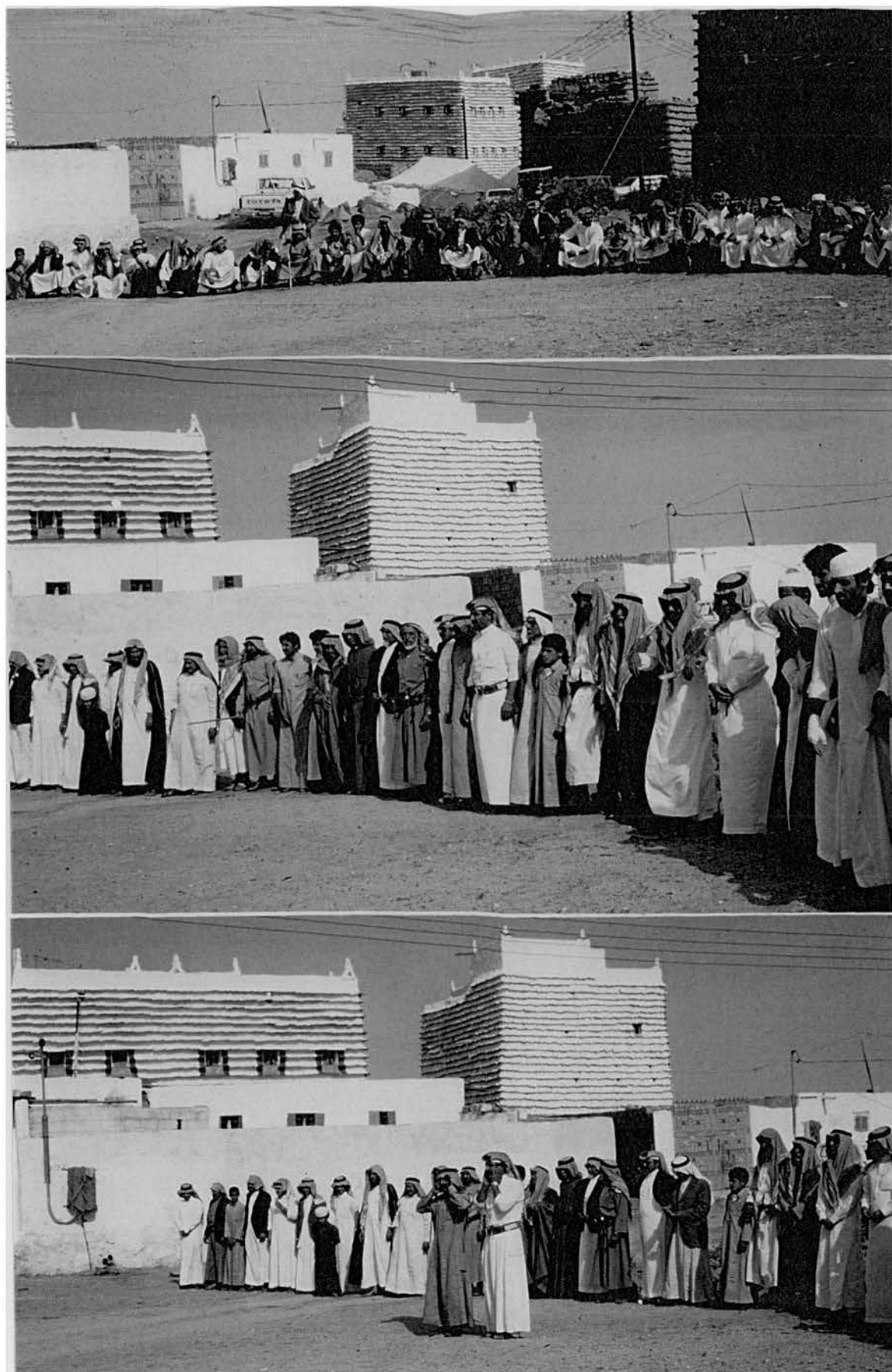


Figure 2.11. A marriage ceremony (top) the members of the host family are waiting the guests, (centre) the hosts are standing to greet the guests, (bottom) the two male vocalist welcome the guests.

at the centre by the elderly people. During their procession the guests sing traditional songs, which praise the family of the bride and congratulate both families. On the other side the family and relatives of the bride are also grouped in line, the centre being occupied by the elderly and by the father of the groom (figure 11). When the two lines face each other in the public yard of the village (*al-baṣṭa* or *al-muraḥḥab*), the guests must greet the host. This greeting is answered by two male vocalist from the host's line who stand in front of the line. Then the guests are divided into groups, with each group being hosted by one family of the host community. The guests are served with traditional coffee followed by traditional food as starters. After a few hours all the guests are called to the feast in the house of the bride's father. After that the guests leave the scene taking the bride and her mother to the groom's new house.

During the night people dance and sing to the sounds of drums. Women perform similar rituals but with less formalities. In recent times this was done in total isolation between the male and female quarters. Old people speak of mixed dances when men and women faced each other in opposite lines. Marriage ceremonies among craftsmen are performed with less spectacle.

Dances (figure 12) are performed on occasions like marriage, circumcision. Each tribe has its own style of dancing but they maintain broad similarity. The rhythm of these dances is fast and so are the movements of the people. Usually the male adults stand hand in hand in two opposite lines. Older people occupy the centre of these lines. Between the two lines are set the drummers. The two lines sing one song to the sound of drums. The dance is controlled and orchestrated by traditional poets who keep moving from one line to another telling the dancers to sing the song. The dance is interrupted regularly by rifles-shots. Women dance in a similar manner.

Mythology

A number of myths have circulated among the people of the highlands for centuries. The source of these myths can be inspired by natural and cultural factors. For example, high mountains have acquired special significance. The mountain of Ḥarfa in the central section of the highlands is believed to be inhabited by demons. Deserted towers and villages are thought to be the homes of *jinn*, and are avoided as unlucky. Fig trees and disused water-wells are also associated with bad spirits. The Number seven is a bad number. The people use another word to indicate this number. They say *ḥamsa* instead of *sabʿa* which is the Arabic word for number seven.



Figure 2.12. A traditional dancing, after al-Ḥarīfī.

Birds and animals have also been fertile subjects for myths. Hoopoe is considered a sacred bird and it is forbidden to kill that bird. Bulls or oxen occupy a significant position in myth. The tribe of Balqarn in the central section of the highlands proclaim this myth as the tribe is named after the horns. The name of the tribe " Balqarn" means "the one with horn" . Wolves, snakes, spiders have also been loaded

loaded with mythical meanings. The teeth of wolves are prescribed by witches as a healing substance. Comets have also been objects of myths. They have been associated with disasters such as droughts and wars.

Times of famine

Times of famine caused by a long absence of rain have interrupted the lives of the people across the highlands of 'Asīr ('Asīrī, 1987, 391). In such famines, looters from all tribes roam the landscape looking for food and valuable materials. The repeated famines have probably led people to store grain and use it during these times. Famine also contributed massively to the building of watch towers along the fields, to protect them from looting. Some tribes in the times of famine leave their villages temporarily to settle on other lands owned by other tribes. They are often received with care and are expected to help the original inhabitants to harvest the grain for their share of the harvest. This is done among tribes of similar rank.

Conclusion

The conclusion of this chapter can be briefly illustrated in chart 2. The life of the people, across the highlands, is influenced by three major factors. These are: agriculture, security, and the social structure. These factors have their impact on the architecture in a number of ways. Agriculture has led the people to build grain towers as the most impressive structures of villages. It has also led, to the withdrawal of villages to rocky and high ground to preserve arable land. And it influenced the organisation of the farmers houses as we shall see in the next chapter.

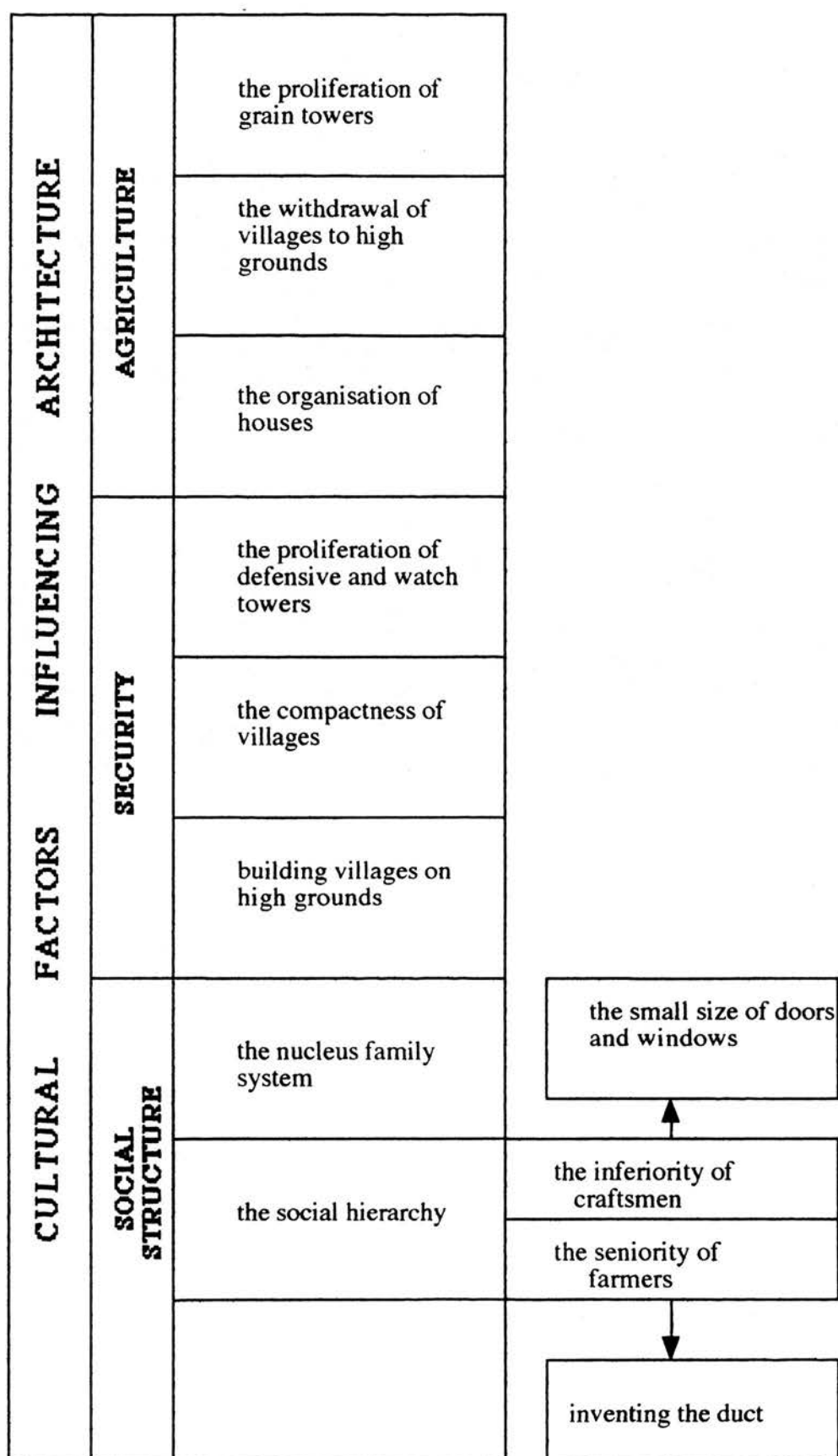


Chart 2.2. The influence of cultural factors on the architecture.

Security factors have led the people to build defensive and watch towers, to retreat from enemies, and to watch their surroundings carefully. For security reasons also the people also built their houses as towers. The security factor is responsible for the compactness of villages . It also explains the preoccupation of villages with high grounds.

The social structure is also responsible for shaping the architecture of the highlands. The social inferiority of craftsmen, has deprived them from employing their skills in architecture. This is best illustrated in the primitive quality of woodwork in floor and roof construction . The small size of doors and windows is also a result of this situation. The high status of farmers on the other hand, has led to the development of large and well-built stone towers to save their major asset; grain. The invention of the duct, as we see shall in Chapter Five, is the most visible form of these social factors.

THE NATIVE ARCHITECTURE OF THE HIGHLANDS; CLASSIFICATION OF BUILDING TYPES

Introduction

According to building materials (Chart 1) we can define three zones of architecture across the highlands: stone architecture in zone A, composite (stone and mud) architecture in zone B, and mud architecture in zone C (Galea, 1987, 249). In each of these zones, two main types can be defined: towers and villages. The classification of towers and villages, a brief description of their main features, and a visual illustration of each type with its tribal and geographic context, is the focus of this chapter. This is the only chapter of the thesis in which composite and mud architecture are described. Therefore they are given more attention than stone architecture, which is the subject of the rest of the thesis.

Zone A (stone architecture)

Towers

According to their external features, stone towers can be divided into seven types. Moving from north to south, these are the most common types:

The projecting parapet tower

The walls of parapet towers (figure 1) are crowned with a stone parapet projecting out over wood or stone beams. The parapet has defensive purpose. It prevents attackers from climbing the tower and invading it from the top. The parapet

THE NATIVE ARCHITECTURE OF THE HIGHLANDS					
		BUILDING TYPE	MAIN FEATURES	TRIBAL CONTEXT	Section
	ZONE A (STONE ARCHITECTURE)	TOWERS	The projecting parapet tower	Zahrān and Ghāmid	North
			The plain tower	Shumrān, Khath'am and Balgarn	Centre and South
			The duct tower	Rijāl al-Ḥajr and 'Asīr	
			The niche tower		
			The stone slate tower		
			The platform tower		
			The round tower	'Asīr	South
		VILLAGES	Compact	Zahrān and Ghāmid	North
				Rijāl al-Ḥajr	Centre
				'Asīr	South
	ZONE B (COMPOSITE)	TOWERS	The round tower	'Asīr Shahrān Qaḥṭān	South and Southeast
			The square tower		
			The rectangular roof plan tower		
			The L-shaped roof plan tower		
		VILLAGES	Semi-compact	'Asīr	South and Southeast
				Shahrān	
				Qaḥṭān	
	ZONE C	TOWERS	The sealed courses	Shahrān Qaḥṭān	North and Northeast
			The exposed courses		
VILLAGES		Loose			

Chart 3.1.

Classification of building types across the highlands.

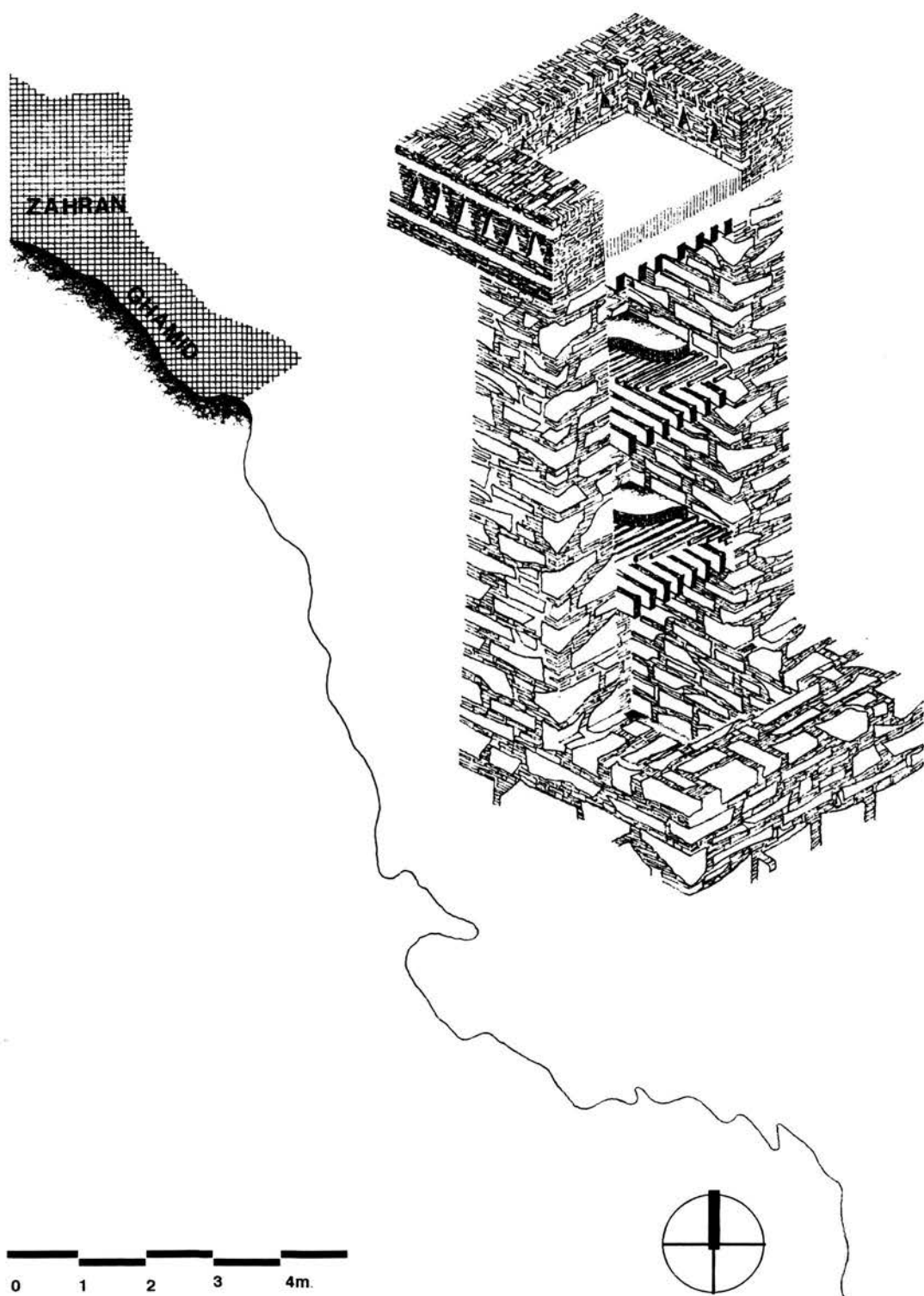


Figure 3.1.

A typical projecting low parapet tower, with its tribal and geographic context.

works as a shield for its occupants against attackers. The parapet is punctuated by loopholes facing in all directions. The projection of the parapet also provides extra space for the narrow platform on the roof. Some of these towers are provided with windows below the parapet, while other towers lack this feature.

Depending on the height of the parapet, there are two versions of this type. The first type is the low parapet tower. It is built in the north section of ʿAsīr and belongs to the two tribes of Zahrān and Ghāmid. Unlike their counterparts in Ghāmid territory, the parapets of towers located in Zahrān territory are decorated with white stones of quartz in triangular patterns. The second type of these towers has a high parapet (figure 2). It is built immediately southward, in the territories of Shumran, Khathʿam and Balqarn and is kept free of decoration. In some towers the four corners of the parapet are crowned by stone finials.

The plain tower

Some towers (figure 3) are built free of any major features (Abū ʿAbs, 1985, 20) except thin loopholes found in the upper halves of these towers, and small entry holes. They can be rectangular or pyramidal in form. Stone used in these towers is taken from immediately neighbouring locations. Therefore these towers come in a variety of colours reflecting the geological structure of the highlands. Indeed some of these towers are difficult to recognise as they are fully integrated with their surroundings. These towers are dispersed in all sections of the highlands in different sizes. They are found mostly outside villages, beside fields, which suggests that they are used as watch towers. They occur scattered throughout territories held by tribes such as Khathʿam, Shumrān, Balqarn and in the north territories of Rijāl al-Ḥajr.

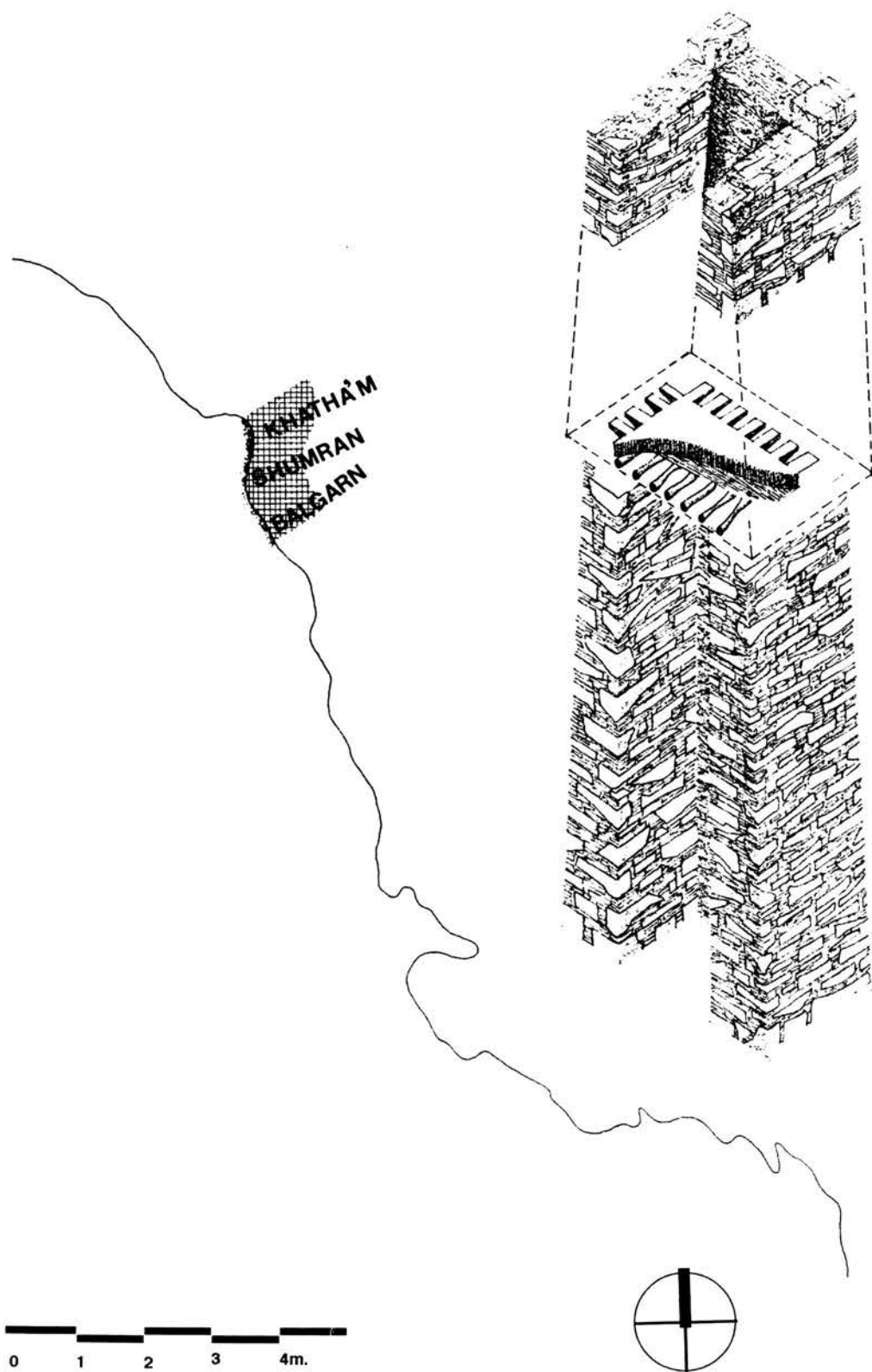


Figure 3.2.

A typical high parapet tower, with its tribal, and geographic context.

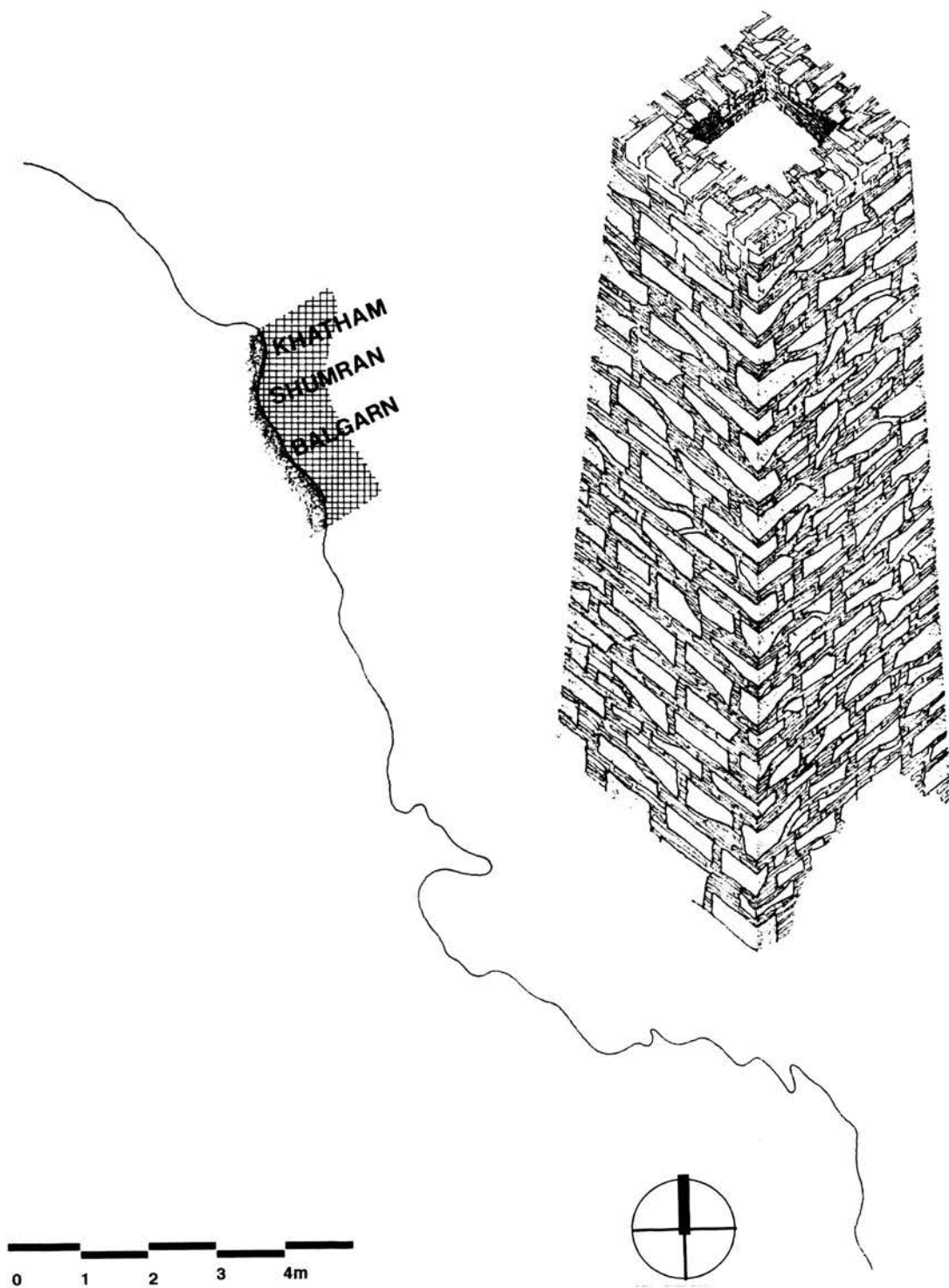


Figure 3.3.

A typical plain tower, with its tribal , and geographic context.

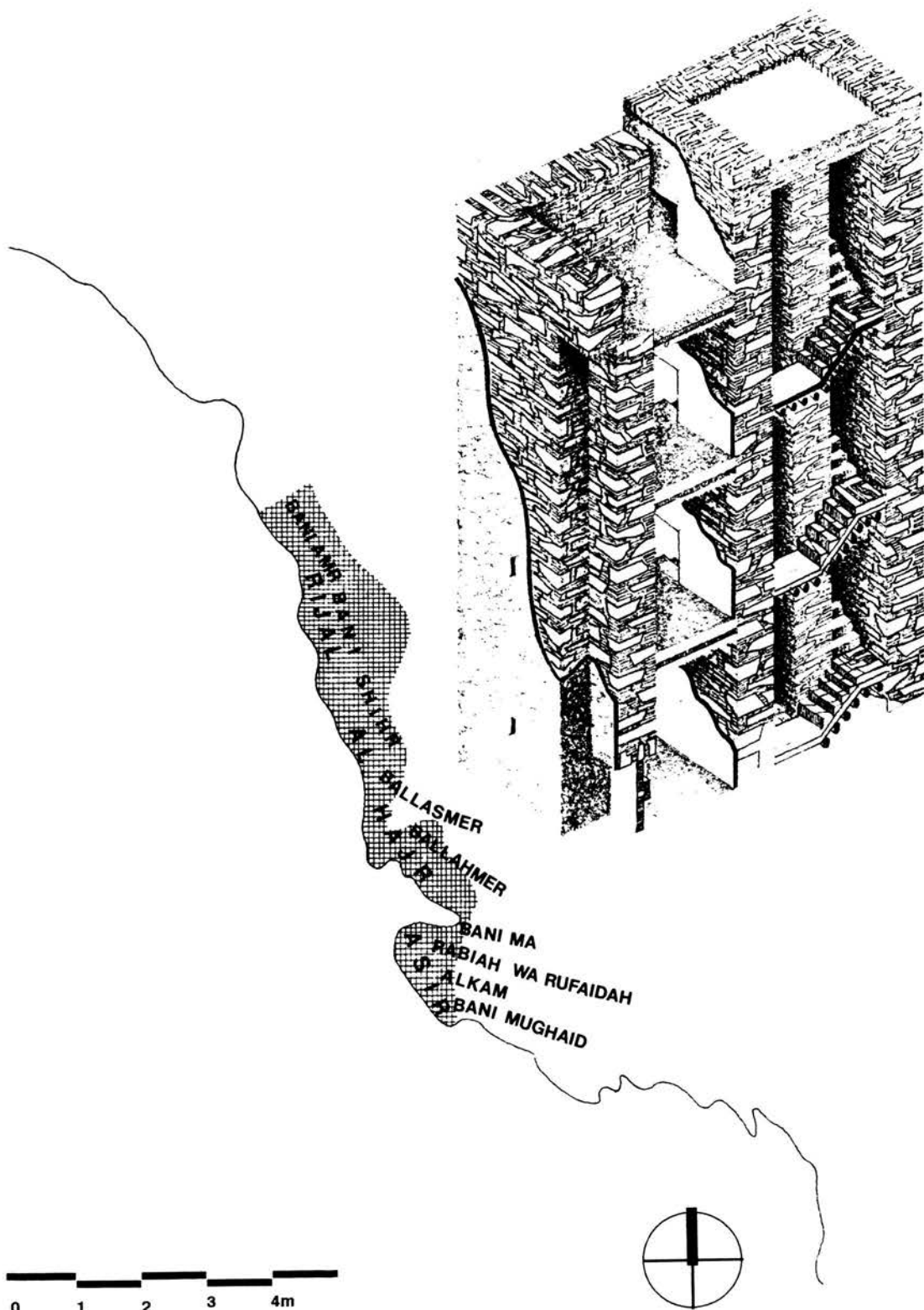


Figure 3.4.

A typical duct tower, with its tribal, and geographic context.

The duct tower

Some towers (figure 4) are provided with ducts of different sizes, which run along the centre of the main facades of these towers. These ducts run from the ground up and they end differently. The function of the duct is investigated in chapter four. Duct towers are used as granaries, defensive, and watch towers. Most of them serve all of these functions . This type is the most common type of stone towers across the highlands. It is native to the south and central sections of the highlands in territories held by the two tribes of Rijāl al-Ḥajr and ‘Asīr. A distinction between towers built by each tribe from the outside is possible only on the bases of the colour and the texture of these towers. Duct towers of Rijāl al-Ḥajr are always veneered . They come in dun or tan colours. Duct towers of ‘Asīr are " naked" and feature a dark grey colour. Owing to the variety of duct towers in purpose and design features, they are presented in detail in the second part of the thesis.

The tower with a projecting niche at the top

Some towers (figure 5) are provided with a niche locally known as *burj* at the top (King, 1976, 25) . This niche is placed above the entry hole or it can be found on top of towers on all four sides. The niche is carried on wood or stone beams projecting out of the tower. The design of the niche gives a clue to the function of these towers. In the niche there is a hole pointing downward, so that defenders can drop stone missiles on attackers, while being protected behind it. Therefore these towers are used for refuge . This explains their locations in the middle of fields. If people working in the fields are suddenly attacked, they soon take refuge in these towers and drop their stone missiles from behind the niche. Usually these towers are veneered on

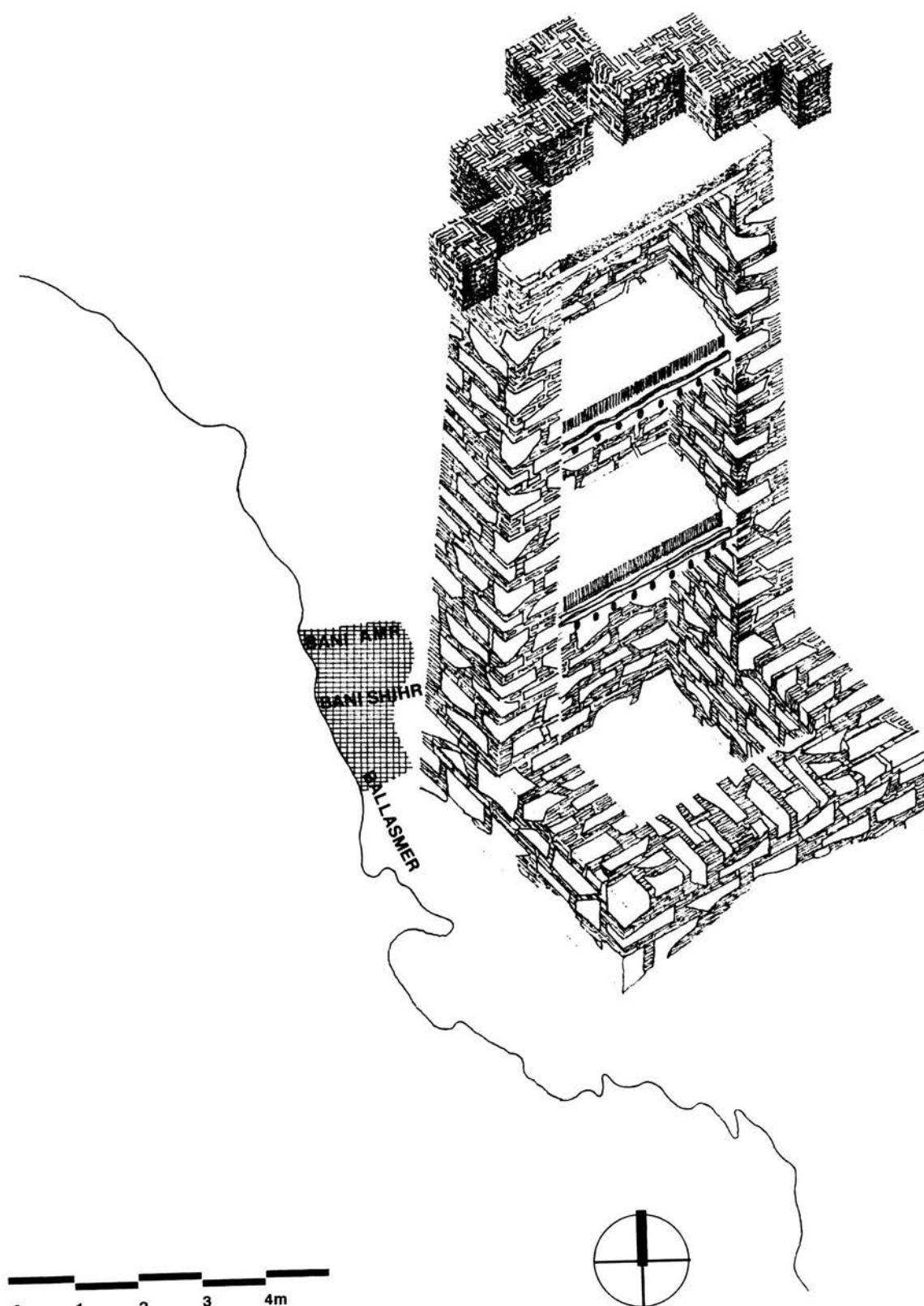


Figure 3.5.

A typical niche tower, with its tribal, and geographic context.

the outside. This type of tower is found principally in the central section of the highlands in territories occupied by Banī 'Amru, Banī Shihr, and Ballasmir. All these are sub-tribes of Rijāl al-Ḥajr.

The tower with a vertically projecting stone slate beside the entry point

In some towers (figure 6) the entry hole is provided with a vertically projecting stone, placed along one side of the entry hole. The stone gives a clue to the function of these towers. It indicates that these towers too are used for refuge . They are found mostly in the middle of fields. When the people are attacked they take refuge in these towers. The stone protects them as a shield from rifle fire by their attackers. The stone is stationed against the most vulnerable side, where the risk is greatest. They are smaller than the parapet and plain towers. These towers are found with a veneer in territories held by Bani Shihr, and Ballasmir, two sub-tribes of Rijāl al-Ḥajr. This type is also found " naked" in lands occupied by 'Alkam, a sub-tribe of 'Asīr.

The platform tower

Some towers (figure 7) are built over stone platforms which increase their stability. The towers projecting upward from the platform can be of the bold or the duct type. The height of the platform can reach as high as one third of the total height of the tower. These towers are often found outside villages on high locations. As they are provided with loopholes, they are used for refuge, for surveillance, and as granaries. These towers can be plastered or left bold. The platform tower is found in territories held by Banī Shihr, Ballasmir, and Ballaḥmir of Rijāl al-Ḥajr and by 'Alkam, and Rabi'a wa Rufaida of 'Asīr.

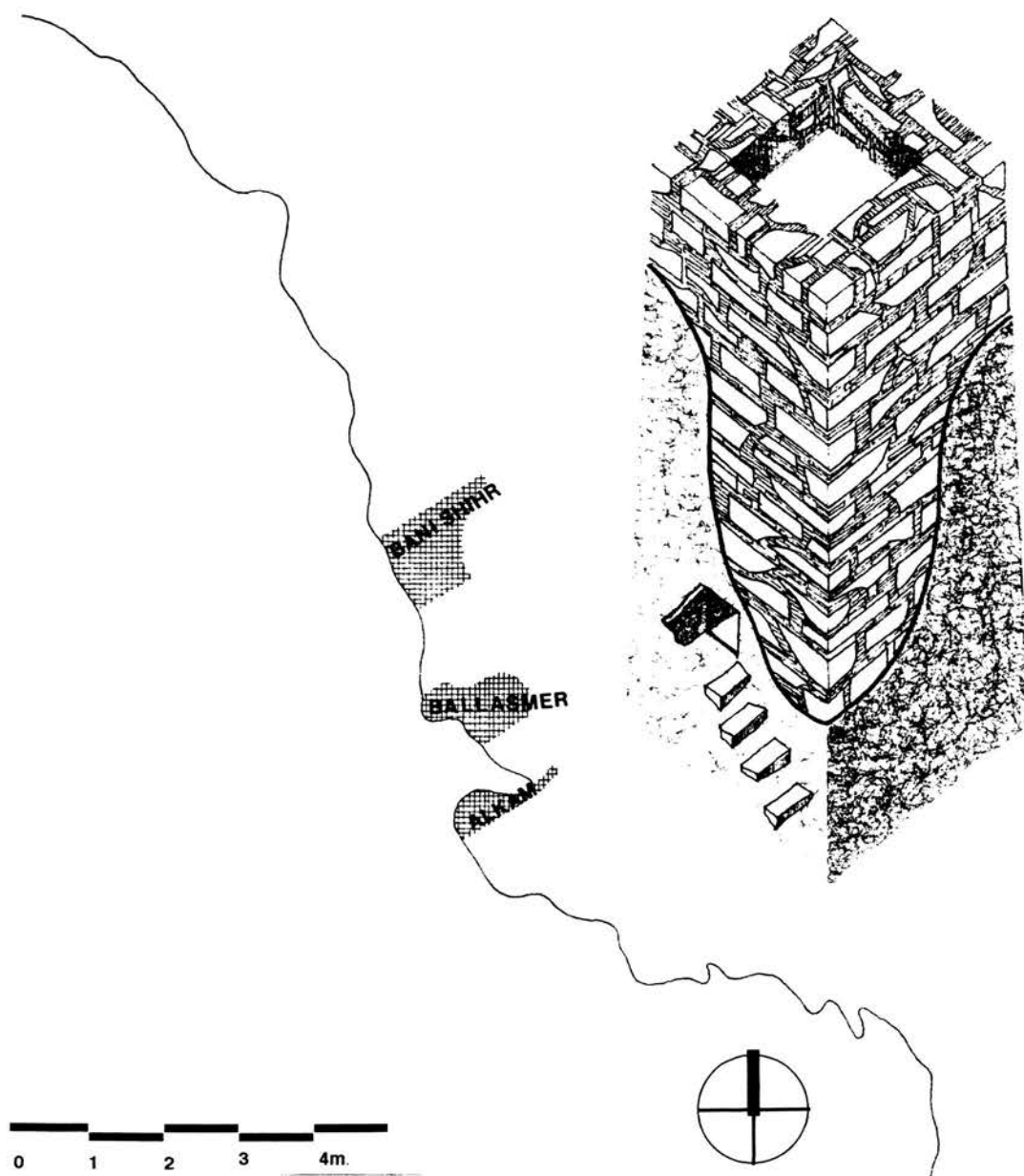


Figure 3.6.

A typical tower with a projecting stone slate, with its tribal, and geographic context.

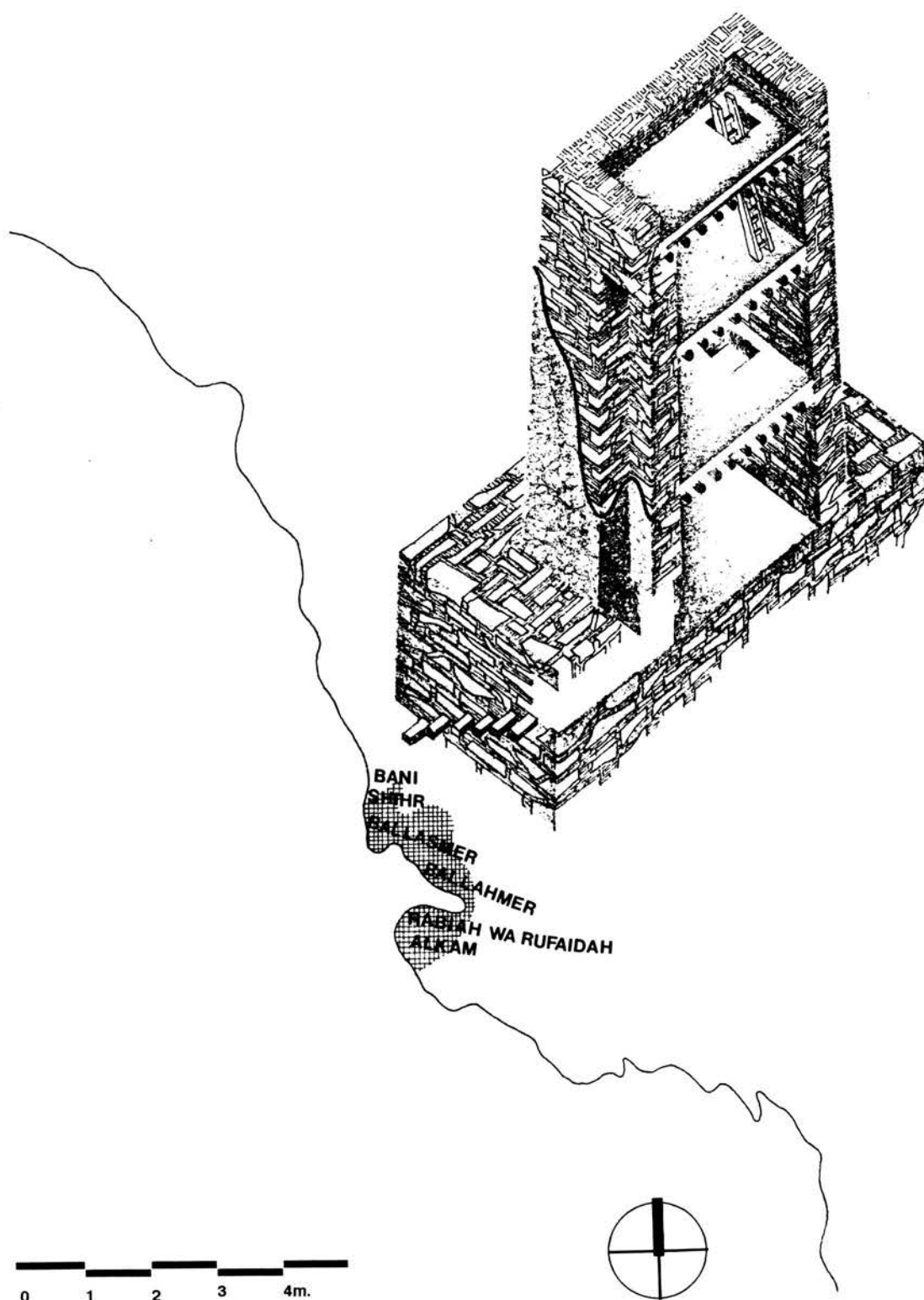


Figure 3.7.

A typical platform tower, with its tribal and geographic context.

The function of stone towers is difficult to grasp from the outside. Only by examining the interiors of these towers can we understand their function. But we can assume with a certain degree of accuracy the function of the tower according to its location. Towers incorporated into villages are used to store grain or as defensive towers. Towers outside villages are used for defence and refuge. Towers beside fields are used as watch and refuge towers. Some towers serve all these functions. The size of the tower gives a clue to its function. As a rule grain towers are the largest. Then come the defensive towers, and finally come the watch towers as the smallest and thinnest type, although they are as high as grain and defensive towers.

The round tower

The previously mentioned towers are square in plan, but there are other towers which have circular plans. Round towers (figure 8) are more suitable for surveillance purposes than are square towers. For this reason, round towers are found on the peripheries of villages. Round towers are occupied by fewer people. Most of the time the round tower is occupied by only one defender. For this reason the round towers are much narrower than square towers. But they are just as high. These towers are indigenous only to the sub-tribes of 'Asīr tribe. Nowhere else in the highlands can we find stone round towers.

Round towers can be divided into many types depending on their height and design like square towers. Round towers are sometimes provided with stone slates, ducts, and circular platforms. The most common form of round towers is the plain round tower, which is provided with a hole at the bottom, used as an entry hole, and another hole at the top, used for surveillance. This type is common across 'Alkam, with fewer examples in the territory of Rabi'a wa Rufaida, and in that of Banī Mughaid.

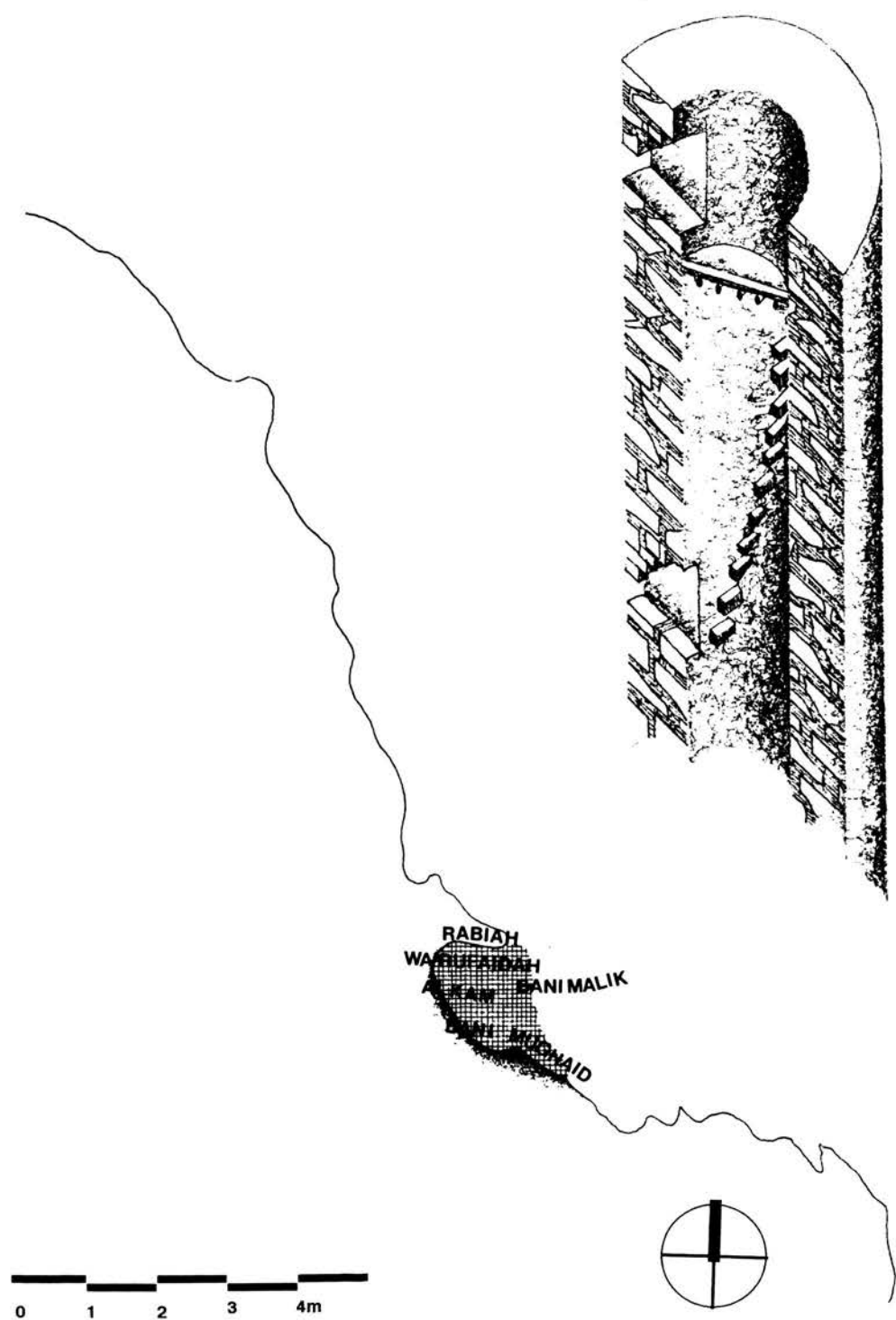


Figure 3.8.

A typical round tower, with its tribal , and geographic context.

All these clans are from 'Asīr tribe. Round towers are also found in large numbers and in different sizes in the isolated mountains of the lowlands, along the escarpment.

Villages

Villages in zone A are built in compact forms. According to their geographic location in the highlands and their main design features they can be divided into three types : the compact villages of the north , the compact villages of the centre , and the compact villages of the south.

The north section

Main features

Villages in this section (figure 9) feature horizontal and cubic configuration of one- and two-storey houses punctuated by square windows. The houses maintain one orientation and some of these are veneered or whitewashed. Wood pillars carrying small platforms along the front facades of villages, projecting stone steps out of the walls of the houses leading to the roofs of these houses, and the projecting parapet on wood beams similar to those in villages towers, are all common features of these villages. The horizontal configuration of these villages is interrupted by one or two towers of the parapet type used as granaries and defensive towers. Watch towers extending over the neighbouring hills are also common. These villages are occupied by the two tribes of Zahrān , and Ghāmid.



Figure 3.9.

A typical stone village of the north section.

Functional organisation of the houses

Villages in this section are built of one- and two-storey houses (Prochaska, 1977, 120). The one-storey house is built when the immediate topography allows for horizontal expansion. In such cases, the house is extended horizontally and is divided into three sections that host the livestock, the guest reception room , and the private section used by the household. Two-storey houses are built on steep ground. In these houses the lower floor hosts the livestock and farming equipment. The reception room and the living and sleeping quarters are on the first floor. Access to these rooms is through a staircase which leads into a small lobby that connects the rooms. Sometimes the staircases are built outside the house .

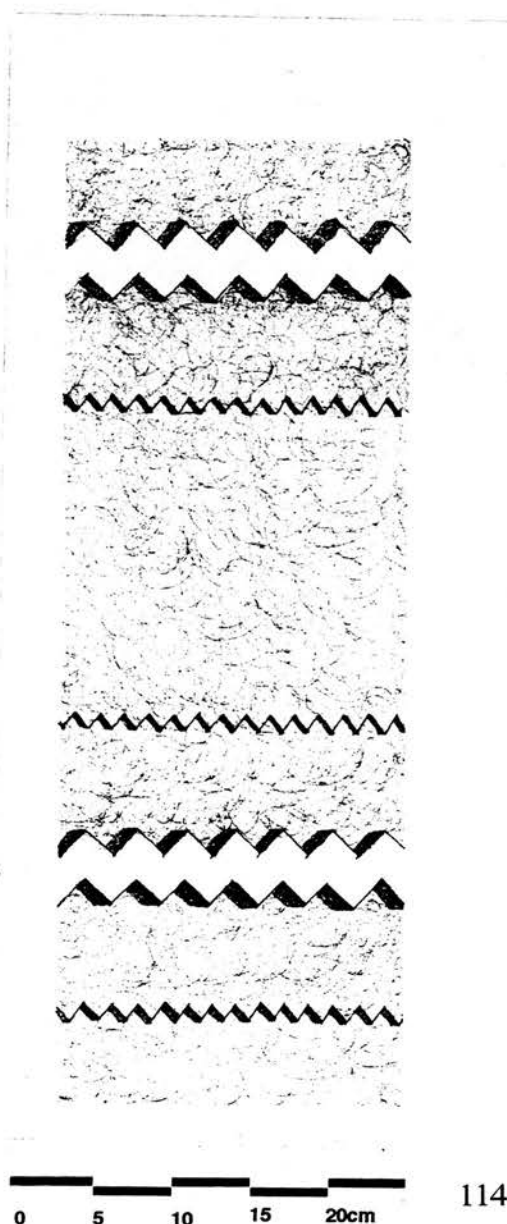
Building methods and traditions

The major distinctive design feature in this section is the use of wood in different ways. It is employed inside the houses as a partition wall, with wood members attached to each other forming a wall. One or two pillars inside the main room, used structurally to support the roof, are a typical feature of the houses in this section (Prochaska, 1977, 122) . Square wood members projecting out of the walls over the windows is a common feature of villages in the north section.

Wood carving

Wood carving is a major building tradition in this section of the highlands (Dostal, 1984, p 90) . Windows, and main beams, made from wood, are often carved. Panels around windows are carved with geometric and saw-tooth motifs (figure 10) . Doors (figure 11) are also subject to carving. Metal joints and nails integrate with the saw-tooth carving motifs of the door. The trunk and the capital of the pillar in the reception room (a typical feature of the reception rooms in the village houses of this section) are carved with abstract and geometric motifs. This tradition is probably influenced by the neighbouring al- Hijāz region to the north, where wood carpentry is a common tradition.

Figure 3.10. Carving of a window panel.



The central section

Main features

In this section similar units are repeated to produce entire villages (figure 12) . Each unit is made of a single room marked by a door and a window . This unit is repeated in a symmetrical and asymmetrical manner to produce larger units, that form houses and villages. The units are built in the form of terraces, which become front yards for the houses and are used for threshing grain. The local topography influences the arrangement of these units, which result in linear forms or L-shaped houses (figure 13) .

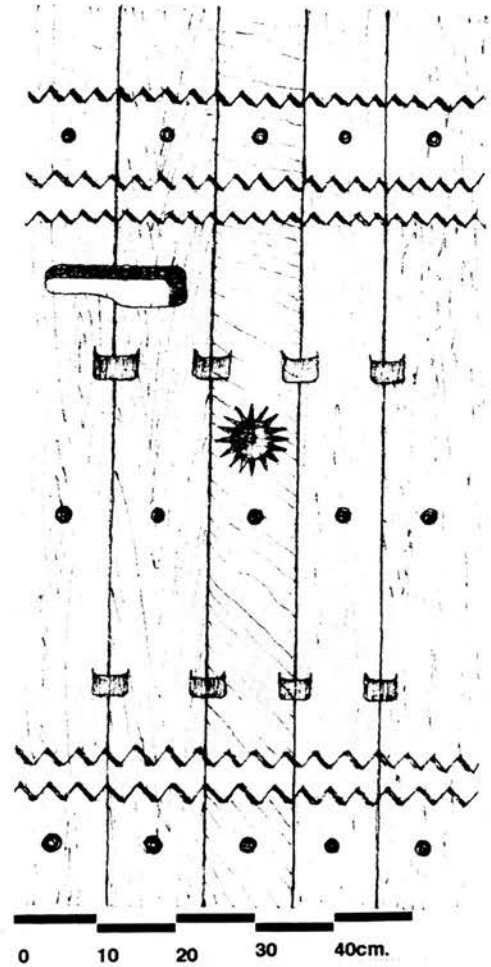


Figure 3.11.

Typical carving of doors of villages in the north section.

These units are connected from the outside by staircases projecting out of the walls of these houses. The village is oriented to face the east and the south-east to benefit from the sun's rays. Most villages have shaded platforms supported by wood pillars used for gathering in the summer. These villages are found in the territory occupied by the tribe of Balqarn, and Banī⁶Amru, a sub-tribe of Rijāl al-Ḥajr. Most houses in this section (al-Qaḥṭānī, 1992, 263) are veneered by a local material called *qadād* to protect the walls from disintegration by rainfall. This gives the villages their distinctive dun or tan colours and a smooth texture.

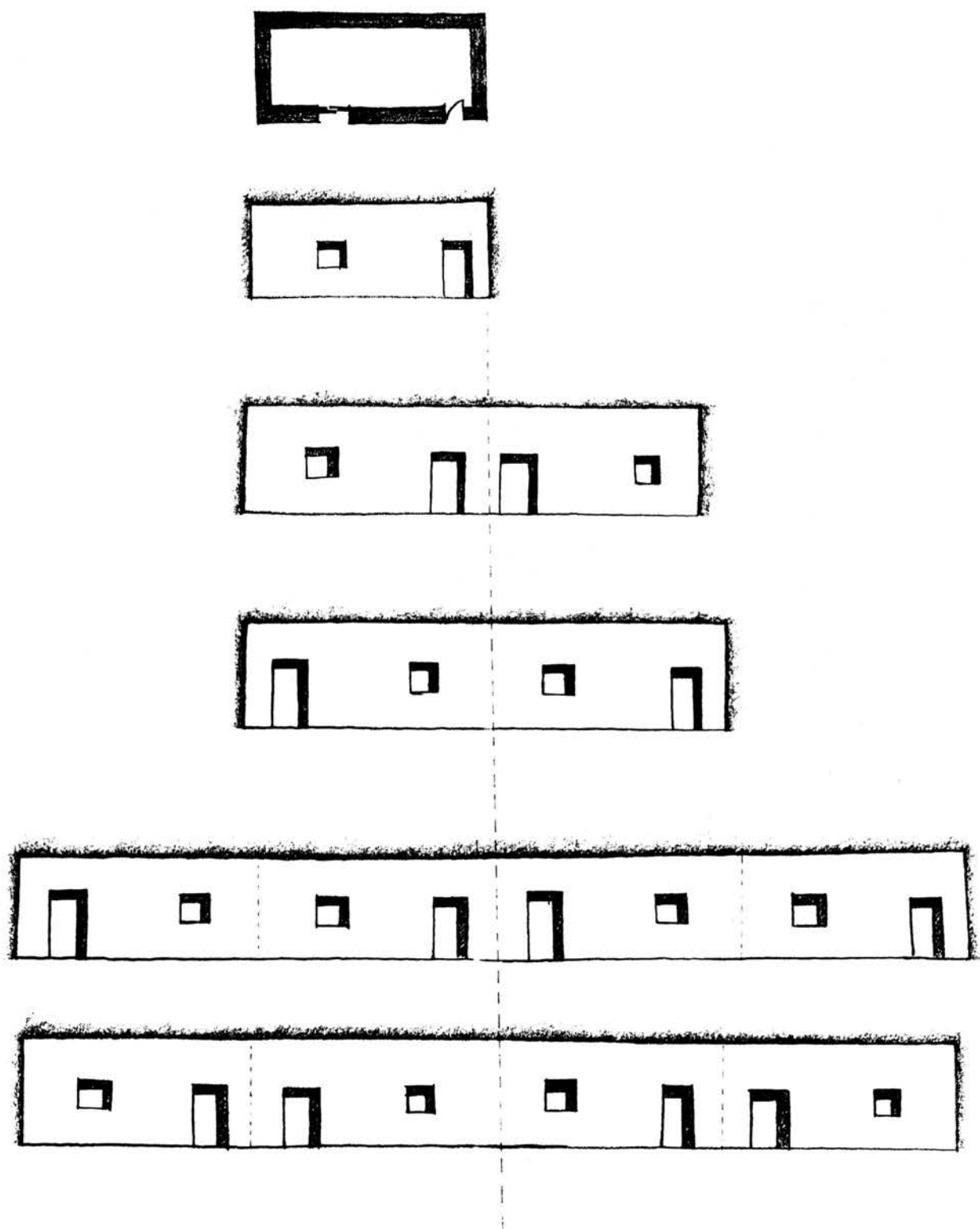


Figure 3.12.

0 2.5 5 7.5 10 12.5m

Villages of the central section are made of repeated units.

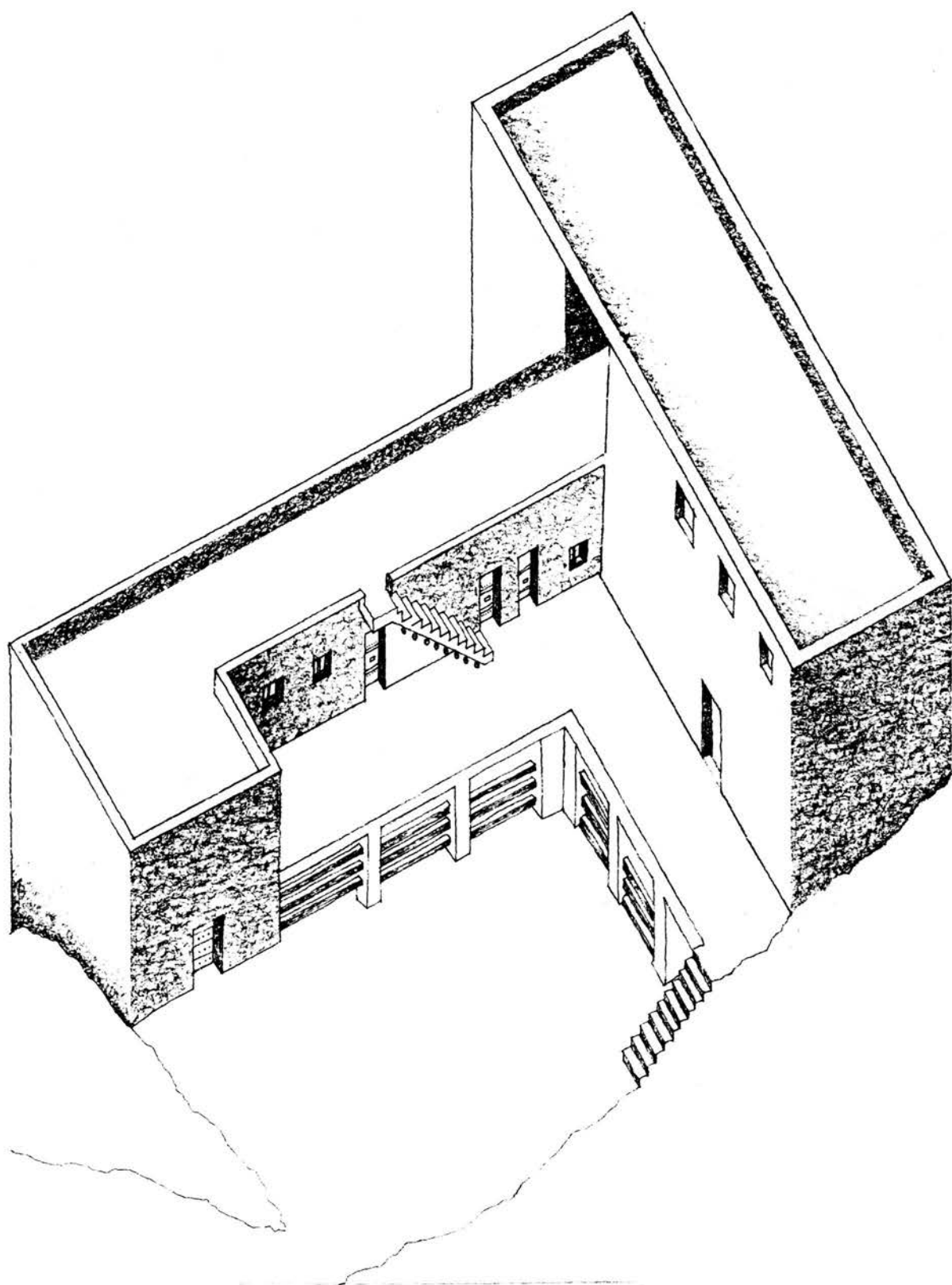


Figure 3.13.



An L-shaped house in the central section of the highlands.

The houses in this section (figure 14) are built from two- or three-stories high (Prochaska, 1977,122). The two-storey house is made up of four to six rooms. The rooms on the ground floor are used to shelter the livestock and the farming equipment. On the second floor is the reception room , as well as the living and sleeping rooms of the occupants which open into a lobby. In the three-storey houses there are seven or eight rooms. On the ground floor is the livestock and the farming equipment. The second floor contains the main reception room, and the guest dining room. The living quarters of the occupants are relegated to the third floor. Cooking, washing, and other household duties are practised on this floor. These floors are connected through a staircase inside the house. But in both types of house, the outdoor terrace, and the projecting staircase for every house, is an essential feature.

Building methods and traditions

The most visible feature of these villages is the design of windows and their decoration. Each window is divided vertically by a wood post into two parts where the control of air and the intensity of the light is managed by closing or opening one or both sides of the window (figure 15). The window is topped by a stone or wood lintel. In the south parts of this section, windows are framed by the white stones of quartz or by whitewash. In this section also some doors are decorated with floral and geometric motifs. Door-knockers are sometimes metal lion's heads against a circular metallic background.

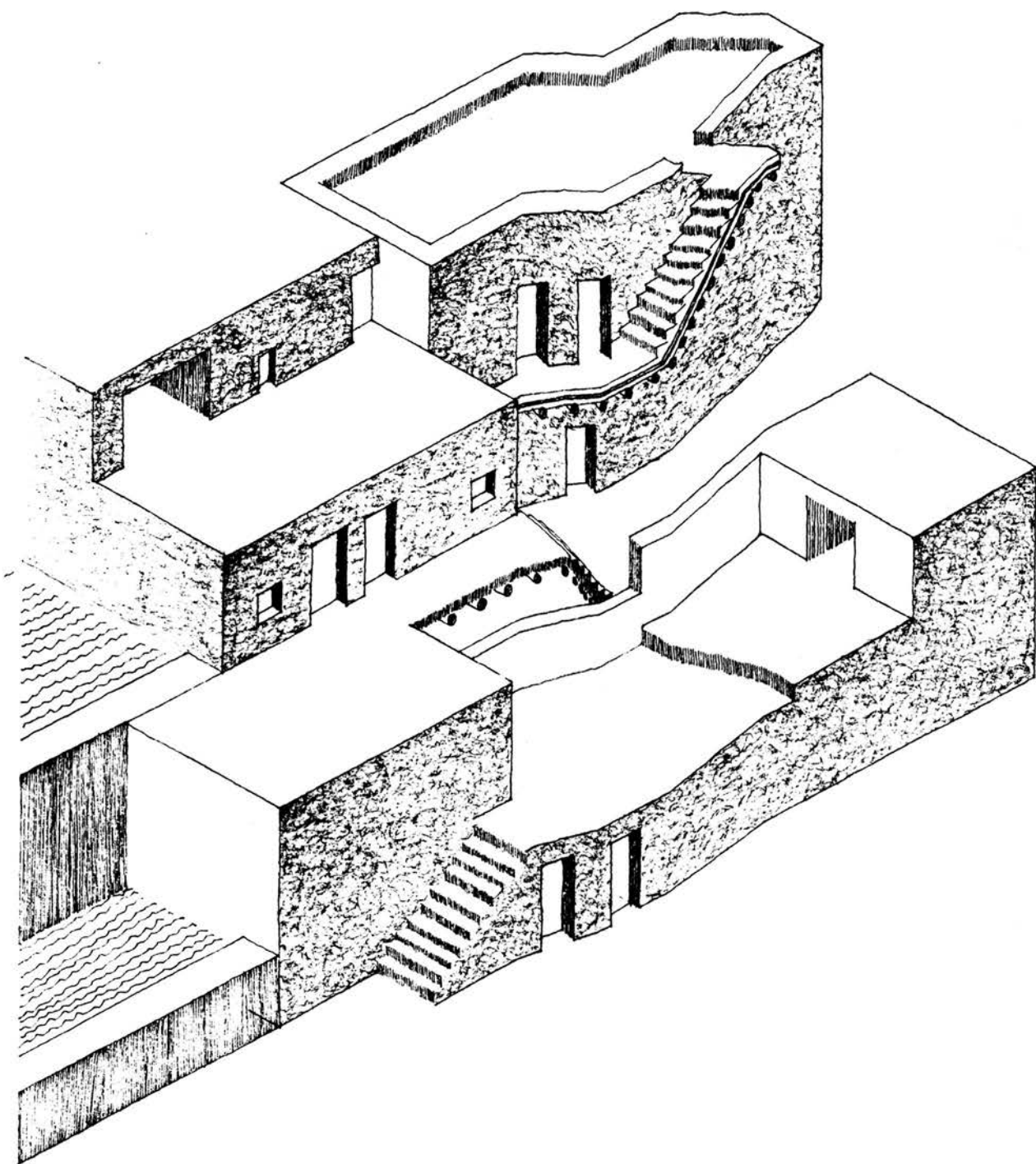


Figure 3.14.

A typical terraced village in the central section of the highlands.

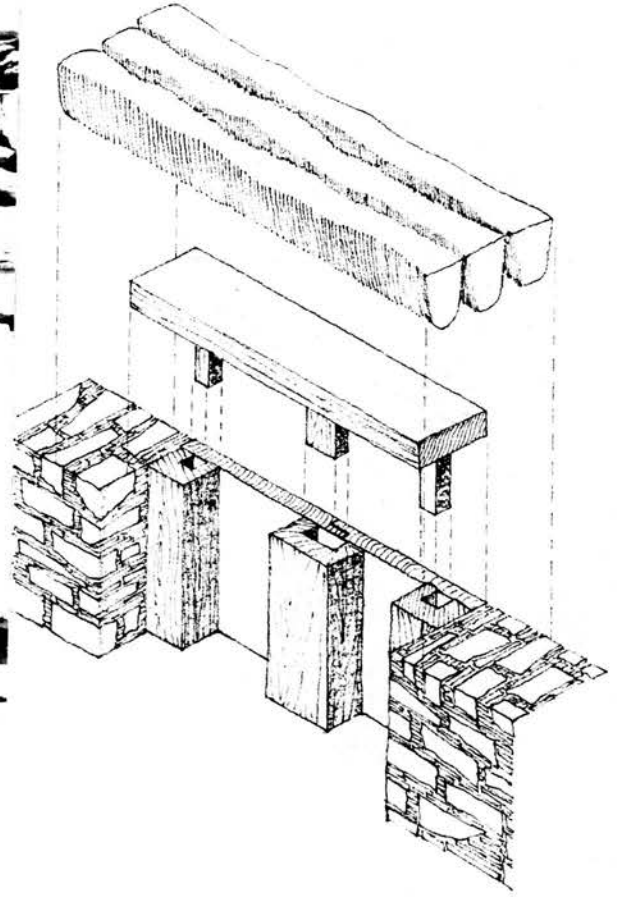


Figure 3.15.
Window construction in the central
section of the highlands.

The south section

Main features

The houses of villages in the south section are connected to each other, so that the whole village looks like a monolithic stone structure. These houses take horizontal shapes forming continuous facades. As a result these villages maintain one orientation along the north -south axis. This horizontal configuration is broken by the village tower

which is often of the duct type. These villages are usually built on top of hillsides , or along water channels. A number of villages in this section are explored in detail as we focus on duct towers in the second part of the thesis.

Stone decoration

Before ending the description of zone A it is important to describe the type of stone decoration which is employed heavily in stone towers and villages across the highlands. Using the white stones of quartz against the dark walls visually connects the architecture to the landscape. Stone decoration is native to the north and the south section, but not to the central section where cladding the towers denies them the chance of stone decoration. To single out each pattern of this technique would be time consuming , so I limit this written account to the most common patterns.

The chequerboard pattern

As the name implies , windows and loopholes of towers (figure 16 a) are framed on both sides by white stones of quartz according to a grid pattern producing a visual effect similar to that of a chess board. A white stone of quartz is followed by a dark stone and so forth. The outline of this pattern can take a square, linear, or rectangular form . The linear form is locally known as *al-thurayyā*. This pattern can be applied around fake loop holes to produce balance and harmony into the wall. This pattern is native to the south and the north section of the highlands.

The belt pattern

There are various forms of this pattern. A tower can be rounded by a thin band

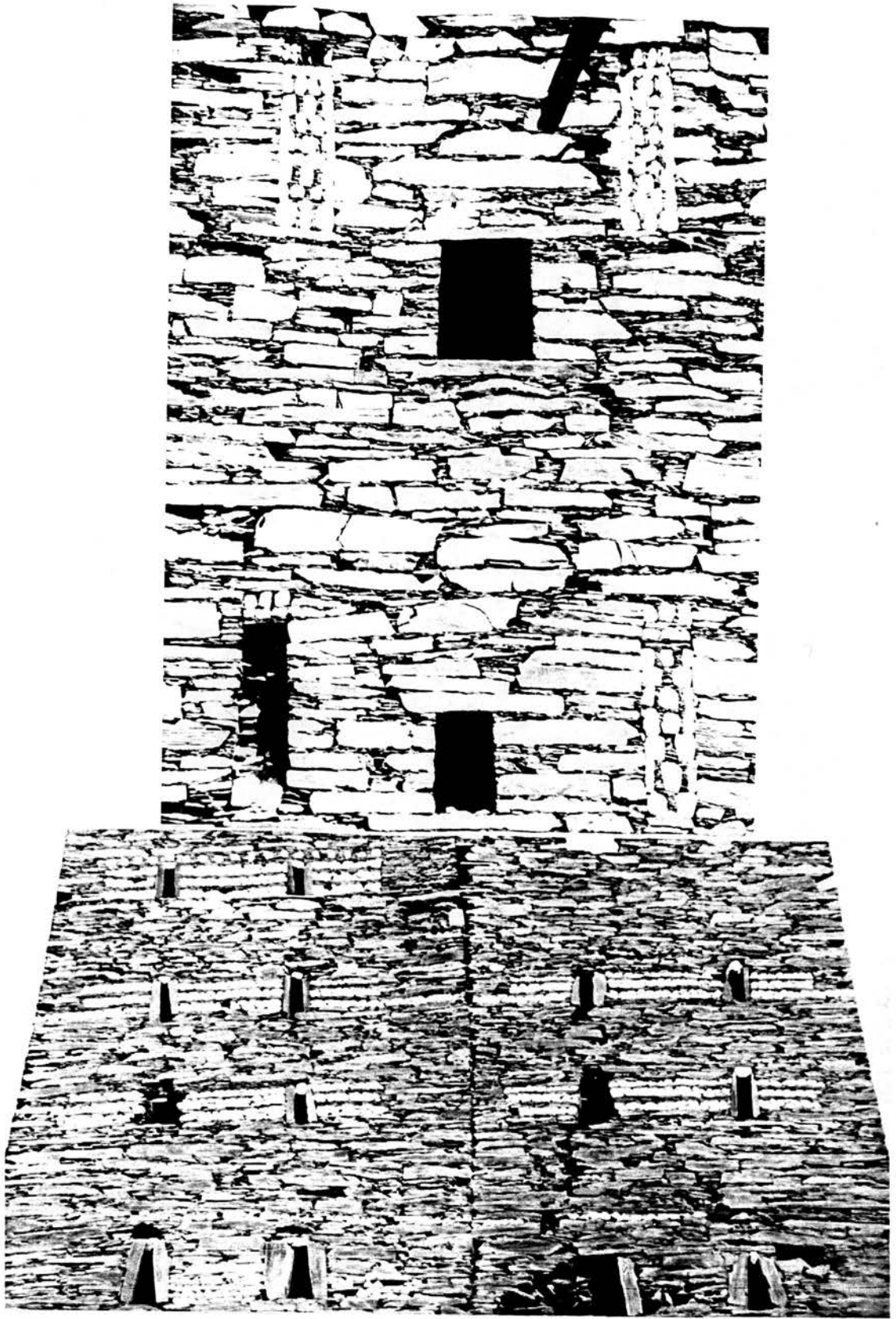


Figure 3.16. a, b. The punctuation technique of quartz,(top) the chequerboard (al-thurayyā) pattern,(bottom) the belt pattern.

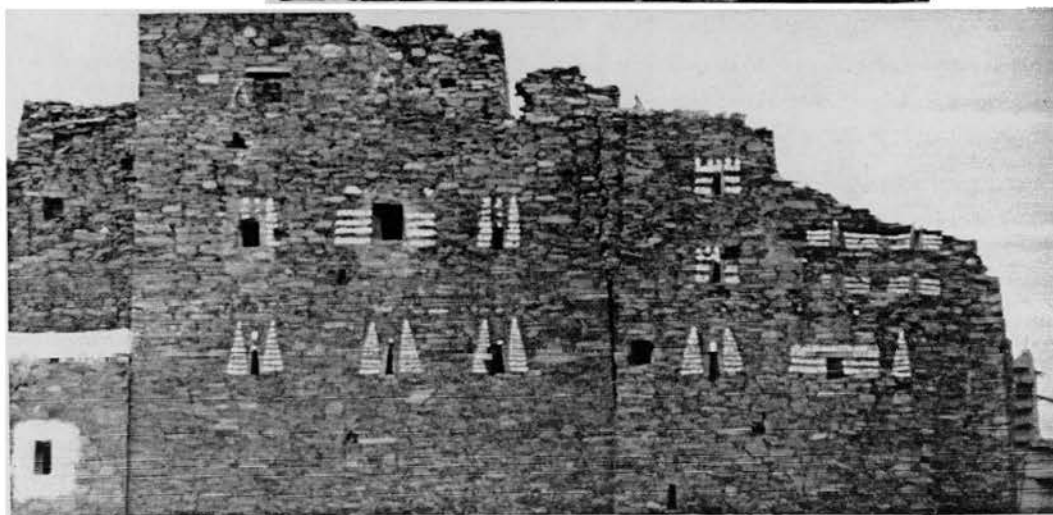
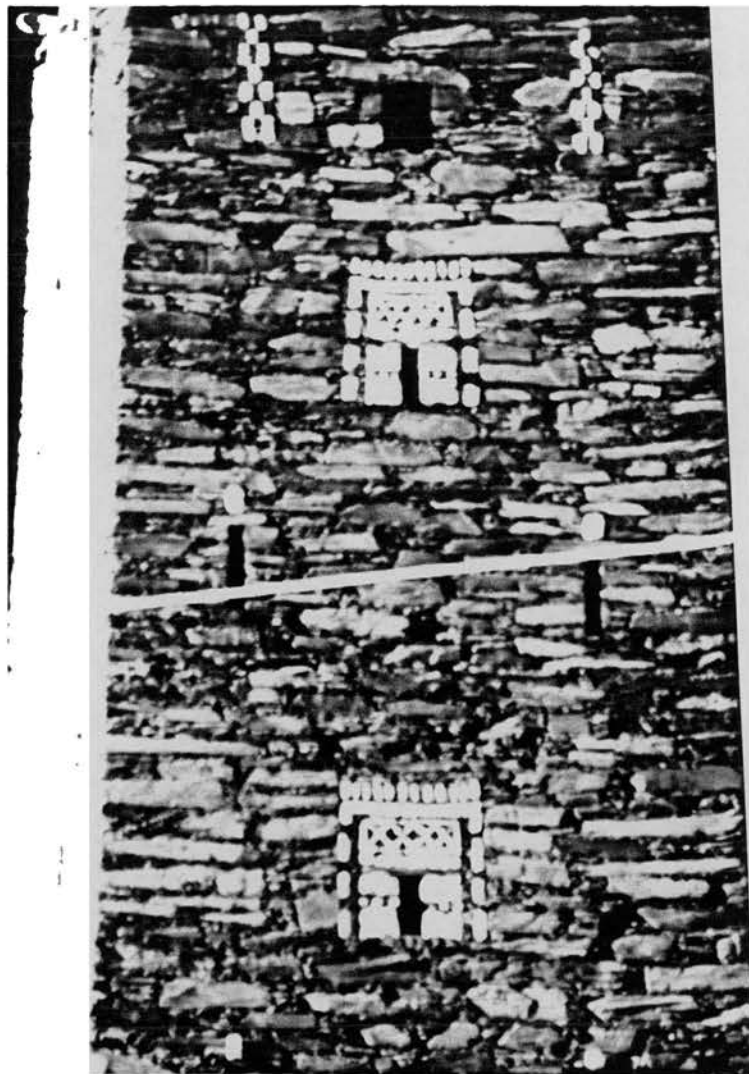


Figure 3.16. c, d.

The punctuation technique of quartz, (top) the carpet pattern, (bottom) the triangular pattern.

band of white quartz . In other towers (figure 16 b) multiple bands of thick white stone circumscribe the tower, marking its floors. These bands are also applied on the same courses surrounding loopholes. This pattern is found in the south section of the highlands. It is also applied to the parapets of towers in the north section of the highlands.

The carpet pattern

Another form of stone decoration (figure 16 c) is applied around the windows in a special design similar to that of a carpet. In this pattern it is easy to define the frame, the field , and the centre in a similar organisation to that of a carpet. The hole (often a window or a loophole) occupies the centre of the overall pattern. Beside the dark hole are two white stones separated horizontally by a thin dark ground dotted by three small white stones. Over the hole is a rectangle decorated with white stones in a lattice form. A thin dark ground separates this rectangle from the frame which is made of white stones placed next to each other. On top of the frame is a thin linear band with small white stones. This organisation is symmetrical along the vertical axis of the hole. This pattern is repeated in numerous towers as the most common decorative technique across the south section of the highlands in the territories held by all clans of 'Asīr who excel in this technique.

The triangular pattern

There are two forms of this pattern of decoration. The first type (figure 16 d) involves loopholes in defensive towers. Each loophole is framed on both sides by two triangles made of white stone . Sometimes the loophole is integrated as the centre of the white triangle. This pattern is found in the south section of the highlands in territories held by all clans of 'Asīr tribes.

The triangular pattern is applied onto the parapet of towers. White triangles are placed next to each other in a linear composition along the parapet. Often one or two bands of white stone run parallel to these triangles. The size of these triangles and the number of the bands running along them depends on the height of the parapet. This pattern is exclusive to Zahrān territories in the north section of the highlands.

Zone B (composite architecture)

Zone B is located to the south and the south-east of zone A. Like that of zone A, buildings of this zone are divided into towers and villages. Both types are built up of stone and sun-dried mud courses. The lower part of both types is made of stone while the upper part is built from mud courses. Both types are distinguished by the stone bands that ring towers and villages to protect the mud courses from disintegration caused by heavy rainfall. This is the type of architecture described by Prochaska as "the Abha-Style" in reference to Abha; the capital of the region (Prochaska, 1977, 123). This feature is indigenous to zone B, in territories held by Ballahmir, a sub-tribe of Rijāl al-Ḥajr, by all sub-tribes of 'Asīr, by Āl Yanf'a, a sub-tribe of Shahrān, and by most sub-tribes of Qaḥṭān.

Towers

The round towers

In accordance with chart 2, towers of this section are divided into two types: round and square towers. The round towers (figure 17) are used mainly (Ṭālib, 1984, 98) as watch towers. They are built in the fields and in the peripheries of villages to watch villages properties and the surrounding areas. They vary considerably in height.

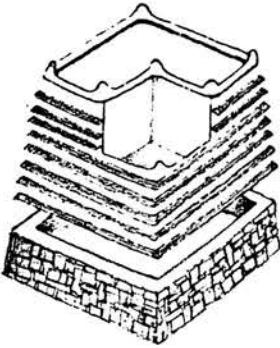
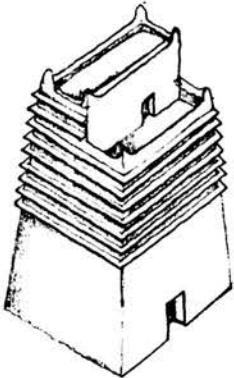
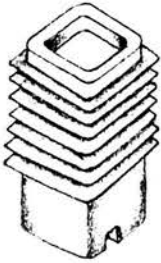

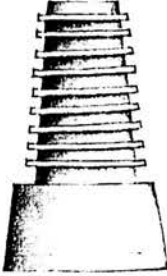

COMPOSITE TOWERS			
SQUARE	RESIDENTIAL	L-shaped Roof Plan	
		Rectangular Roof Plan	
	GRAIN TOWERS	 	
	WATCH TOWERS	 	

Chart 3.2.
Classification of composite towers.

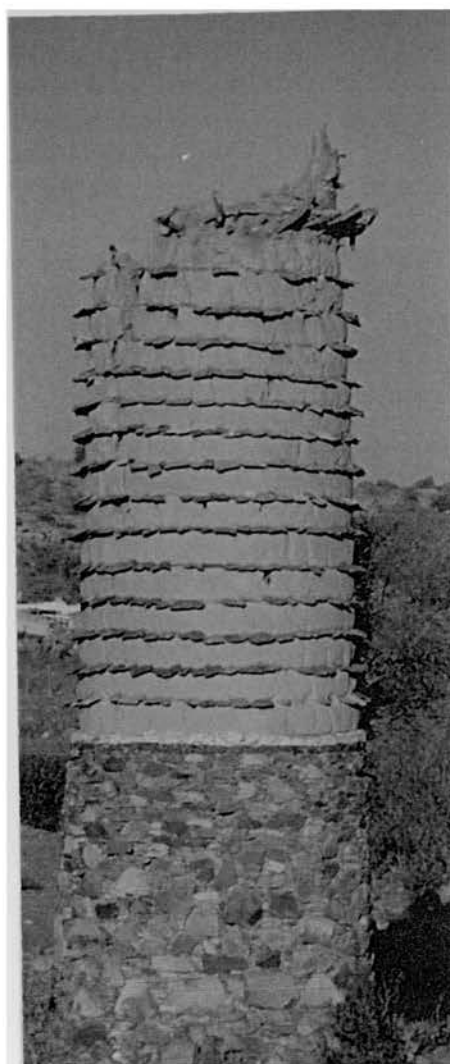
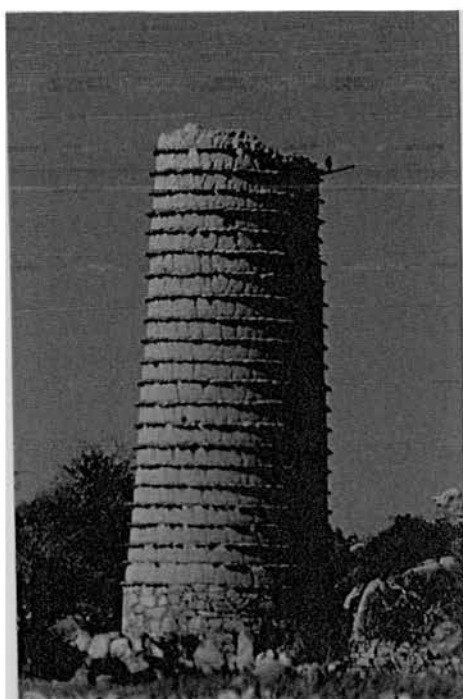
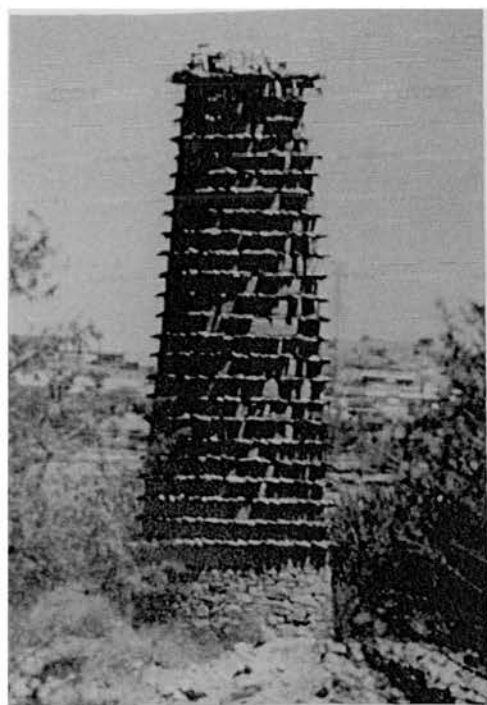


Figure 3.17.
Four round composite watch towers.

Some of them do not exceed five meters , but some of them may exceed ten meters. Round towers take cylindrical or conical forms, where the walls lean inward to provide structural stability for the towers. A few towers are provided with round stone platforms.

From the inside (figure 18) all round towers are hollow. Some towers are provided with wood steps to be used for climbing. In other towers the access to the top is by ropes tied against wood or stone pegs. These towers are provided with loopholes punctuated irregularly on all sides at different heights. On top of these towers are wood or stone platforms used as seats by watchman.

The square towers

The other type of towers built in this zone is square in plan . According to their function, there are two types of these towers. The first type is built primarily to store grain. Each tower of these is divided into compartments where each compartment is used as a grain chamber by one family of the village. The tower is punctuated with holes to ventilate the grain . But these holes are also used as loopholes. These towers are narrow, and are taller than the residential composite towers.

The grain tower of al-‘Arāba village

This tower (figure 19) is built in the village of al-‘Arāba. It is the typical granary (*qasaba*) of the following sub-tribes: Banī Bishr, ‘Abīda, and Rufaida. All these are sub-tribes of Qaḥṭān. The number of these towers corresponds to the size of the village population, where high towers reflect crowded villages and vice versa. Some towers are provided with stone platforms at the bottom similar to those we have seen in stone platform towers.

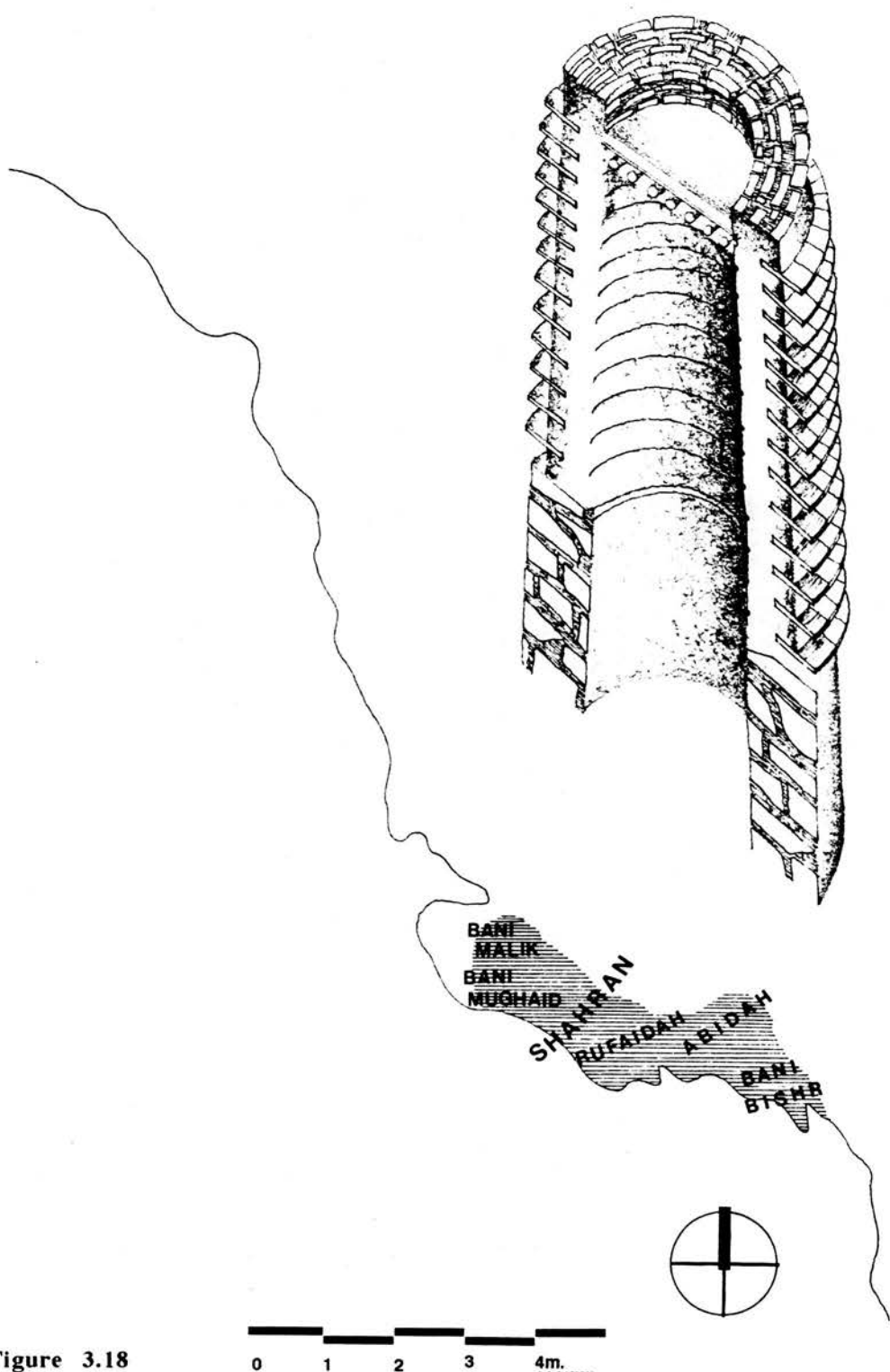


Figure 3.18

A typical round watch tower, with its tribal and geographic context.

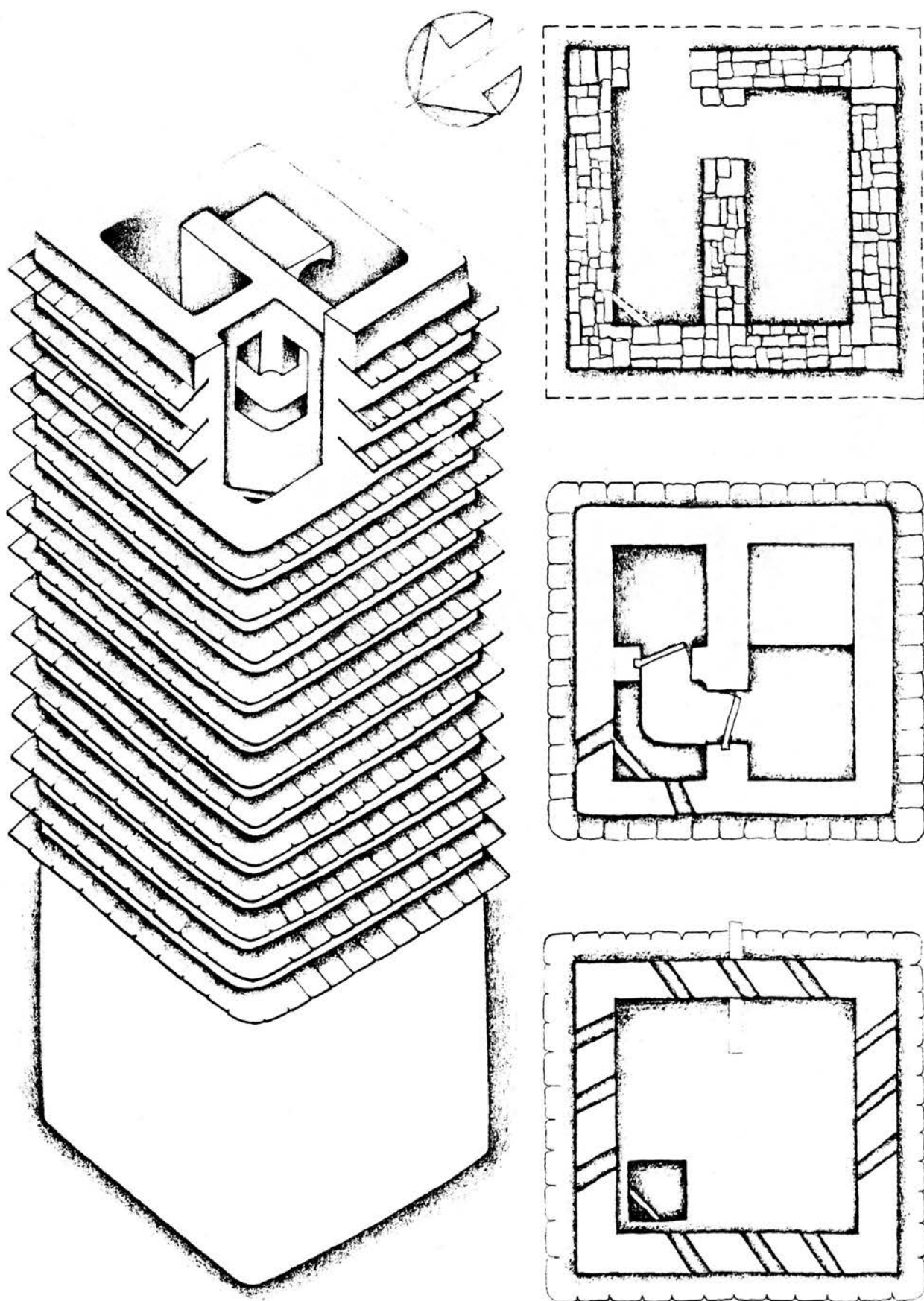


Figure 3.19.

The grain tower of al-Araba village, (left) isometric, right, (top) ground floor plan, (centre) a typical floor plan,(bottom) the roof plan.

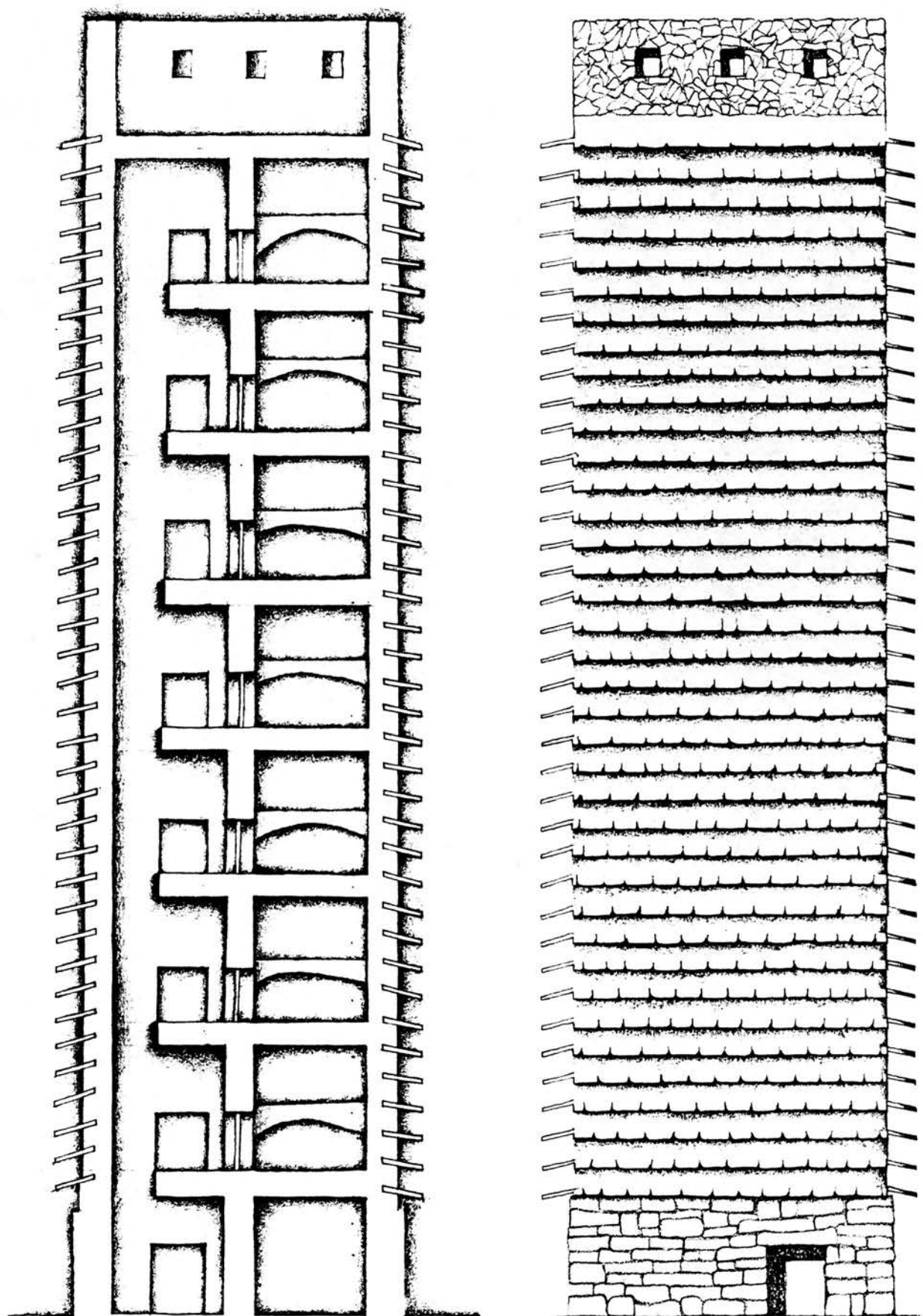


Figure 3.19.

The grain tower of al-Araba village, (left) section , (right) the front facade. 151

The tower is built on a square stone foundation which rises two meters high. The ground floor is divided in the middle into two halves. One half is used as a grain chamber, while the other half is left for circulation. The typical square plan is divided into three parts. The first two parts are grain chambers separated by the supporting wall in the middle. In one chamber there is a deeply raised shelf (*qaşba*) carried by a wood member (*‘adhba*) spanning the width of the chamber. It is in these chambers that the grain is stored. The walls of the grain chambers are provided with wood pegs for rifles. This organisation is repeated throughout the seven floors of the tower.

The third part of these typical floor plans is a small corner left hollow all the way up. Wood members are inserted diagonally into the two walls of the tower to be used as ladders to reach the grain chambers and the roof. Owing to the narrow size of the corner , only one person at a time can use this ladder .

Loading the grain is done by using a rope (*nis‘a*) and a basket (*muqtaf*). The grain is poured loose in the basket. Then the basket is pulled upward . The basket is unloaded as the grain is kept loose in the chambers and left there until required; it is taken down following the same method. Each compartment is used by one family of the village. Assigning the compartments to the families of the village is not determined by any requirements or according to a system of hierarchy. Any family can store its grain in any chamber it chooses.

Mud courses are punctuated by small holes on each floor to ventilate the grain and to keep it cold. The holes are carved diagonally so that the wind blowing from the south-west and the north-west passes through these holes smoothly to the compartments. But these holes are also loopholes, as the diagonally carved holes provide a better chance of surveillance for the watchman. The diagonally carved holes

are also more suitable for defensive purposes than the normal vertically carved holes. Had these holes been carved at right angles like windows, the chance of targeting the defender from the outside by intruders would have been greater.

The tower is crowned by a decorative, white stone parapet which contrasts with the brownish mud courses and the dark grey colour of the stone rings. The tower is provided on the floor of the roof with a wooden groves (*sarab*) to drain rain water . The aperture of the wooden ladder is kept open to provide light and air to the ladder below the aperture. This aperture is closed in time of rain to protect the interior mud courses from erosion.

The texture of the tower is primitive. The mud courses, the stone slates on the outside, and the walls of the inside are left plain and evoke a sense of roughness. This however is in full contrast to the doors of the grain chambers. These doors have a smooth texture and are carefully made and decorated with circular, triangular, and saw-tooth motifs arranged in symmetrical patterns.

The tower is kept closed most of the time. It is opened only at the request of one of the village members who has his share of grain inside the tower. The key of the tower's door is kept in the hands of an honest and reliable man who can be trusted by his community. When the tower is at full capacity, it is often protected by a guardsman from the village who stays there with his rifle during the night. The task of protecting the tower is rotated among the families of the village. But in the morning the tower can be protected as the people work in the surrounding fields.

The people of the village circulate a story about the building of such towers. They speak of a builder who was involved in building a tower. But when he reached

the final stage of building the upper few mud courses, he could not bring the four walls together. He therefore sent his son who had been helping him, with a message to his master, his father complaining to him about a headache. The aged father sent the messenger, his grandson, back to his son, telling him (his son) to tighten his head with a head cover called *‘uṣāba*. The man did so, and the tower was finally completed.

This story is repeated across the highlands in many different and far away villages. It gives us a few clues. Building these towers is a family tradition. There is also a connection between perceiving the tower as a human being and vice versa. It also reveals the difficulty of finishing the top of the tower, where the four walls come together.

The rectangular and L-shaped roof plan composite towers

The other type of tower built in zone B is the residential tower. Such towers constitute the basic single unit of the village. Only by the roof layout can we distinguish two forms of these towers: the rectangular roof plan (figure 20) and the L-shaped roof plan tower (figure 21) . These towers are similar in form and in organisation to their counterparts built of mud ; therefore, a detailed description of a typical mud tower follows applies to the towers of the composite type.

Building methods and traditions

The process of building the tower begins by determining the location where the tower must be built. After the location has been decided, raw building materials are brought to the selected site. The owner of the tower must provide the raw materials and

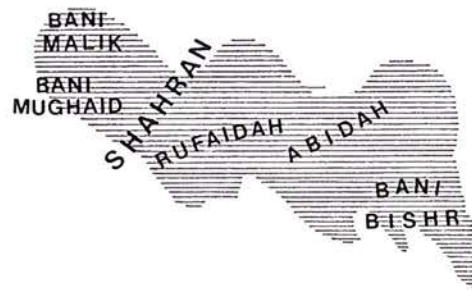


Figure 3.20.



A typical L-shaped composite tower, with its tribal and geographic context. 135

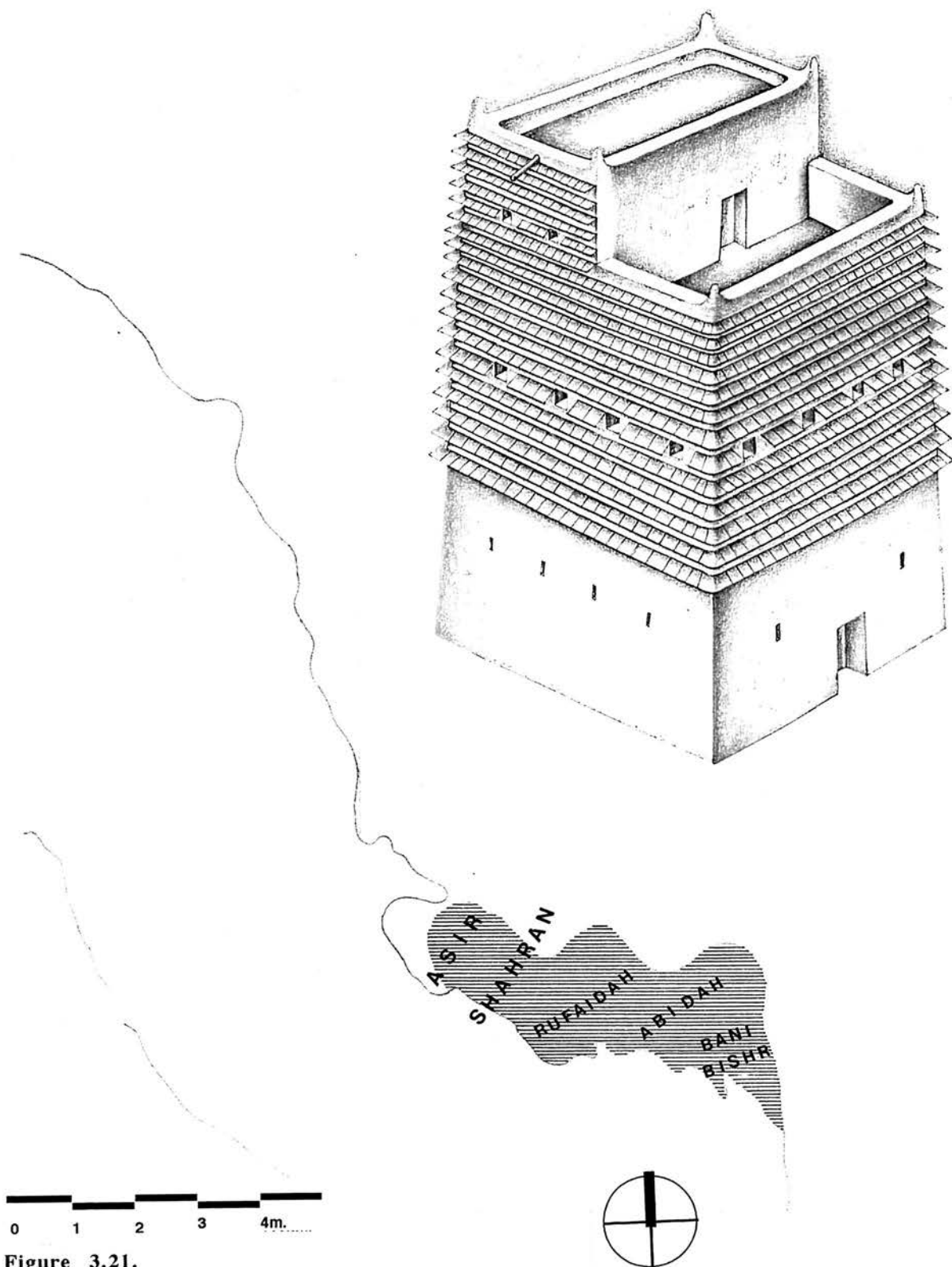


Figure 3.21.

A typical rectangular roof plan composite tower, with its tribal, and geographic context.

the means to carry them to the selected site. He asks his family members and his neighbours in the village to help him bringing these materials which are carried on donkeys or camels. Stone is brought from neighbouring quarries, while wood used in doors, windows, and floor construction, is either brought from weekly markets, or is brought from the surroundings, where it has been cut in advance. If there is a carpenter in the village he brings the wood himself. Otherwise the people involved in the construction of the tower must prepare the wood by trimming it, using their tools used in the fields.

The owner, after consulting his community, draws a sketchy plan of the tower on the ground with a stick and marks it by white ground plaster (*jaşş*). The process of building begins by digging a one-meter trench in the ground along the exterior wall that marks the four sides of the tower. Heavy stones are dumped into the trench as a continuous foundation. Smaller and thinner stones are inserted among the large pieces of stone. Sometimes a muddy mortar is added in the holes among the stone pieces to make stronger joints. Once the external wall reaches two meters above the ground level, the inner walls are built according to the sketchy plan made earlier. The stones used in these walls are smaller than those used in the outer walls. When the rooms are high enough, the erection of the floors begins, by dividing the floor into equal bays where the main and secondary wood beams are laid down. Then a sheet made of palm leaves or sticks of *junipers* or *tamarisk* trees is laid over the wood beams. Then mud is poured over the sheet and levelled by wooden device (*mīdafa*) and left to dry. This process continues in the upper floors. The raw materials like stone and mud are brought up by donkeys, put in baskets and pulled all the way up by using ropes.

The relatives of the owner and his neighbours are involved in the construction process. After the tower has been completed the female relatives of the owner start the

process of scrubbing the floors, with *birsīm* leaves, whitewashing the walls inside the tower, and painting the walls and windows. Once the house has been built the owner must prepare a feast for the villagers in his tower.

Villages

Semi- compact villages are built up of composite towers. Unlike the compact villages of zone A, villages in zone B show a degree of tolerance to local climatic conditions. The outdoor temperature is higher than that of zone A , therefore the houses are not as compact as those of zone A, but rather preserve spaces between them, where people can move and gather in friendly discussions . Windows are provided in larger sizes than those of zone A, and the outdoor terraces provided in the upper parts of the towers are used for family gatherings in the summer.

The village of Āl Khalaf

The village of Āl Khalaf (figure 22) is located in a depression defined by a rocky cliff. This location was chosen not only for its closeness to the fields, but also to avoid the cold winds of the winter. The village is built up of composite towers, which are reserved for rocky ground, to spare the arable plains for the fields. This has led the villagers to build their towers beside each other in a semi-compact pattern. Although the towers are oriented to face the east and the south- east, their orientation is not entirely as uniform as that of the compact villages in zone A.

There are two types of tower in the village: grain and residential towers. The grain towers are similar in form and organisation to the tower of al-ʿArāba village which was described above. The residential towers come in rectangular and L-shaped

roof plans. These towers are separated, although some of the old towers, which are now in ruins, are connected at the top. But at ground level the towers are connected by complex pedestrian semi-shaded networks. None of these end with doors. They lead to the fields. The pedestrian network is necessitated by the congregation of the village population who live in a small area. Towers blocking the routes leading to the fields and the mosque are provided with passages at ground level, to allow access to the towers and the fields.



Figure 3.22.
The village of Āl Khalaf.

From the outside the towers have similar features. The most visible form of these is painting, or whitewashing, the mud courses which ring the windows on the upper floors. The finials, the roof lines, and the doors are also painted or whitewashed. This seems to be an old tradition in the village as the roofs of the old towers are crowned by white stone rubble. In the existing towers this rubble is translated into whitewashing or painting.

The village is provided with a weekly Friday market. This operates by devoting the ground floors of some neighbouring towers to be used as stores . These belong to some residents of the village who practise trade, though only after the weekly Friday prayer. Otherwise these stores stay closed, and their owners practice agriculture. Villagers who want to buy or sell goods can exhibit their goods in the public yard in front of these stores, after the Friday prayer. These goods are mostly agrarian-related goods. The market is used most by the dwellers of the lowland and they exchange their honey for grain.

In recent times the people have introduced new materials to prolong the life-spans of their towers. They replace the clay mortar formerly used to connect the stones by cement mortar. They also cover the roofs with steel sheets to prevent these roofs from leaking under the heavy rainfall . Some towers are crowned by concrete blocks as finials. These moves contributed to a disharmony between the original materials and the new ones.

Zone C(mud architecture)

Villages and towers

Zone C is located to the east and the north of the two previous zones. In this zone villages are built of mud towers. The towers are the houses. Towers in this zone are dispersed loosely, quite simply, and each tower can be defined in total isolation from the other towers of the village (figure 23). People are dispersed in loose towers on the banks of the prominent wadis of Asir such as Wadi Bisha, Tathlith, Habuna and their tributaries. These towers are built by the tribe of Shahrhan, and by Abida, Bani Bishr, Sanhan, Shraif, and Wad ah. All these are sub-tribes of Qahtan. These towers are also built by the tribe of Yam in the district of Najran.

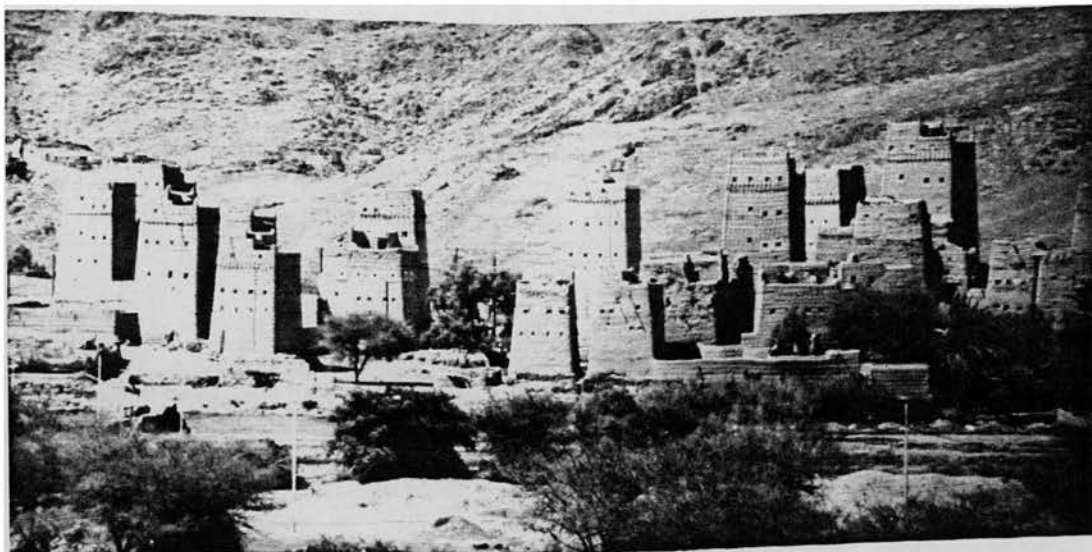


Figure 3.23.

A typical mud village of zone C.

Towers of exposed or sealed courses

Mud towers can be grouped according to texture which reflects the structural method of building these towers. In the first type (figure 24) the courses are sealed by an external layer after mixing the mud mortar with hay. This technique prevents partially the erosion of the mud courses under sporadic rainfall. This type (figure 25) is found mostly in the territory of Shahrān. It is also found in territories of Rūfāida of Qaḥṭān and Banī Mālīk of ‘Āsīr.



Figure 3.24.

A typical residential mud tower with sealed courses.

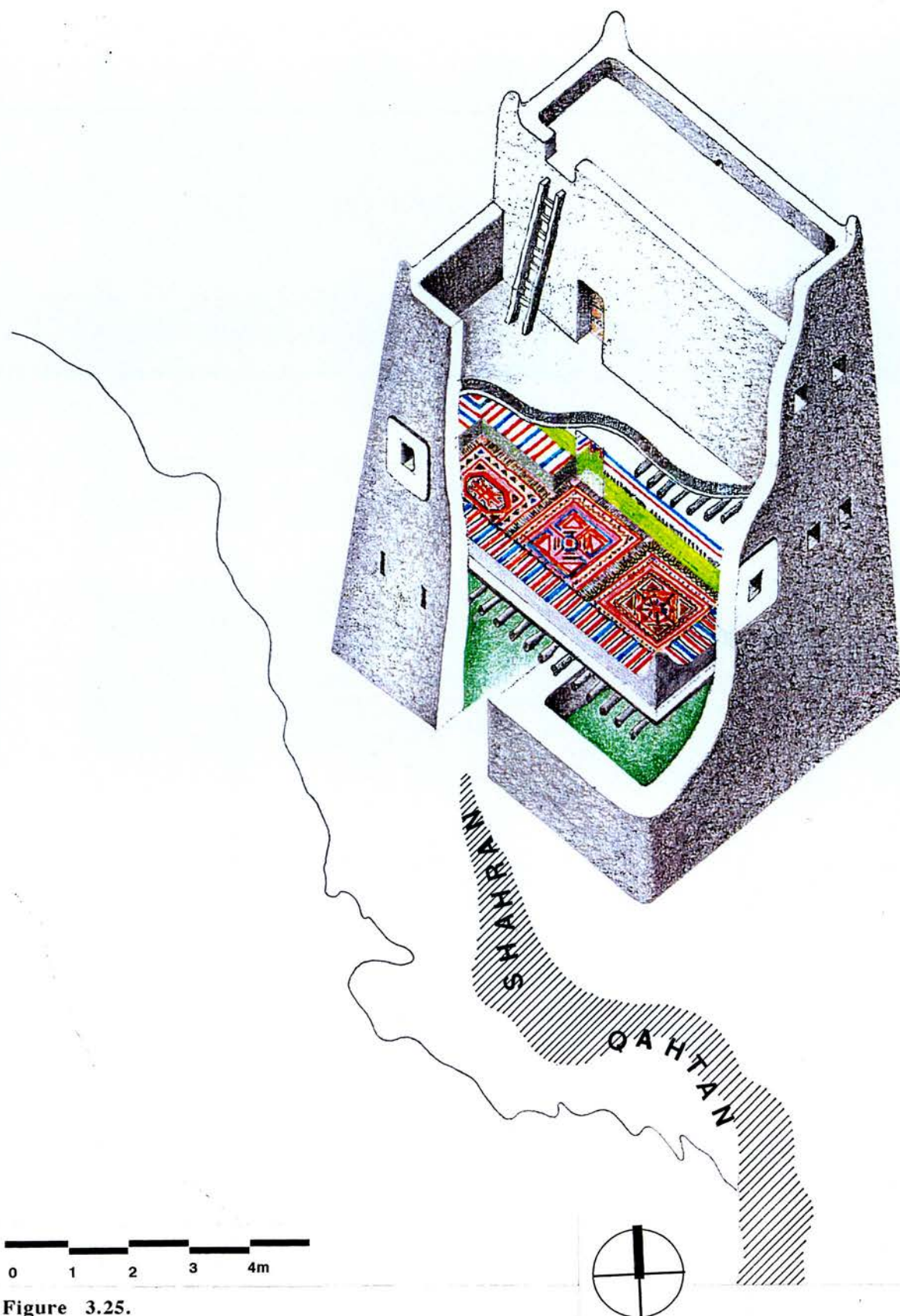


Figure 3.25.

A typical mud residential tower from the sealed courses type, with its tribal and geographic context.

The second type (figure 26) exhibits the mud courses in the facades of these towers. This type (figure 27) covers the entire south-eastern sections of the highlands along the escarpment. It is found among composite towers in Rufaida , ‘Abīda , and Banī Bishr of Qaḥṭān. But it is the favoured type of these clans: Shraif, Sanḥān, Wad‘a of Qaḥṭān. It is also the dominant type across the plateau in the territories of Shahrān, Yām in the district of Najrān.



Figure 3.26. Two mud residential towers from the exposed courses type.

Functional organisation

A typical residential tower is built in three or four stories. The rooms in the ground floor are used as sleeping spaces for flocks of sheep, goat, and cows. In addition to these rooms, a back yard is usually added for the daily handling of livestock. In this yard, the people milk their cows, and slaughter their lambs, in privacy. Animal waste is stored in a corner of the yard and used as fertiliser. The ground floor and the yard are open to each other and usually have access to the fields and places where these agrarian activities are practised.

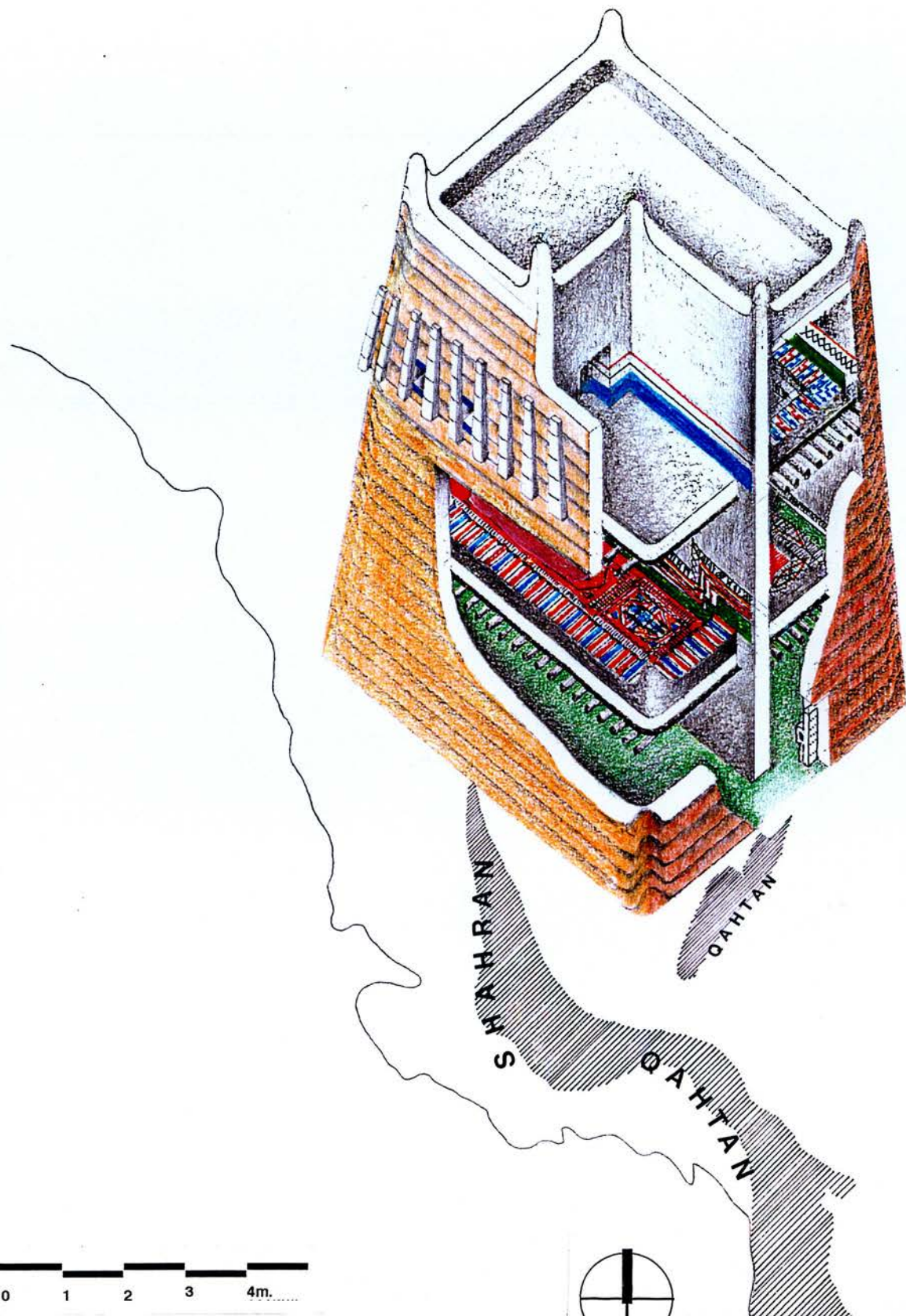


Figure 3.27.

Atypical mud residential tower from the exposed mud courses type, its tribal and geographic reference.

The intermediate floor(s) contain the major room in the tower; the reception room (*al-majlis*). This room usually spans the total length of the tower. Its main use, although it is used as sleeping room occasionally, is to host the guests who are seated in hierarchical fashion. The elderly are usually seated at the pivotal points of the room. The children and the host family members sit at the opposite side, while the rest of the people fill the other spaces according to their age. The people sit on an elevated platform that surrounds the room. The platform can be provided in other rooms of the tower but in the reception room it is more elaborate and its function can be realised more readily. The elevated platform works especially for purposes of formal gathering, where people usually discuss important issues such as disputes over lands, water, blood money, or much happier occasions like marriage and circumcision.

Thanks to its sheer significance the reception room gets the utmost attention from the occupants of the tower. The lower part of the walls (figure 28) is painted with colourful bands against the white- wash of the upper part. Usually a number of horizontal stripes (three or four) circumscribe the room, framing the doors and the windows (figure 29). The horizontal spaces defined between these stripes are filled with a number of geometric motifs.

In the past, colours were made of agrarian materials such as plant leaves , herbs, and dried fruits. Different tones of red, for example, can be extracted from pomegranate after a process of drying and grinding. If mixed with other agrarian materials, new hues of colours could be produced such as brown and yellow .Green is produced by boiling certain fruits and herbs. The tone of the colour is controlled by the amount of water . More water would produce light tones and vice versa. But in recent times paints are bought from the hardware stores.



Figure 3.28.
Painting of a reception room.



Figure 3.29.
A detailed painting of a window.

Doors and windows (figure 29) are painted with tar which can be produced by burning local plants. Because of the heavy character of the tar, it is applied only to the exterior of doors and windows to resist the outdoor climatic conditions. Painting is applied onto the interior walls by using a gentle and smooth brush of goat skin. The stripes and the motifs correspond to the curvature and the projections of the walls adding a sense of harmony to the room.

The ceiling, which is made of wood beams, is also painted with different colours. The floor is scrubbed with *birsīm* leaves brought from the nearby fields. But in the reception room it is covered by woollen rugs that are made locally or purchased from weekly local markets.

The floor contains a small square at the front of the room as a hearth where hot drinks such as Arabian coffee are always kept underneath firebrands. Some personal belongings which are a source of dignity such as rifles and daggers are also displayed on the walls of the reception room. The walls are often punctuated by triangular holes to keep little objects such as keys, gum, and traditional tooth brushes, etc.

The guests' dining room (*al-muqallaṭ*) opens into a small lobby where the dining room also opens. The dining room comes always next to the reception room in term of location and significance. It is painted with similar motifs to those in the reception room, but the number of stripes is less, and so are the motifs. The floor may not be covered, but if so, it would be covered by rugs of inferior quality to those in the reception room. The significance of the dining room is realised in times of feast: A sheet of agrarian materials (*bisāṭ*) is placed in the room and a number of large trays of food will be put on it. On major occasions beef, goat, sheep, lamb and their soup

are the principal recipe for feeding guests. In less important gatherings a blend of wheat, corn, and heated oil (clarified butter) extracted from cows are more frequent. The ceremony for dining is also hierarchical. The elderly are sent by the head of the occupants of the tower to eat first and to occupy the pivotal place where the best food is reserved. The rest of the guests come later, followed at last by the occupants of the tower.

The upper floor is used only by the occupants of the tower. The rooms of this floor are used for living and sleeping purposes. The living room serves a light duty function because the members of the family are busy for most of the day in the fields or looking after their flocks. It is at night time that the family members gather in the living room, for a short time, to eat. Supper is the main meal. Usually one type of grain is used for bread served with oil or yoghurt. After taking the food, the family members talk about their daily experiences. Usually this is done in the presence of the chief of the family, the father or the eldest son. This chat is accompanied by Arabian coffee. A dim light is produced by igniting a goat skin dipped into clarified butter. After this brief chat each member of the family goes to sleep. The parents of the family sleep in a single room. Members of the same sex share rooms all over the tower. To avoid the cold nights of winter the intermediate floors would be used for sleeping because they provide warmer temperatures.

An important aspect of using these rooms must be stated. The rooms, including the reception room, can serve multi-purpose functions. A living room can be used as a bedroom and vice versa. As a matter of fact, only in recent years did the native people assign different functions to different rooms. In the traditional sense, all rooms, except the reception and the guests' dining rooms, are nameless and are subject to any usage.

Each residential tower has an outdoor terrace on top of the tower which covers the entire span, or half the span, of the tower. These terraces are different in size and shape from one tower to another. This terrace breaks down the solid mass of the tower and gives the occupants the chance to have physical contact with the outdoors. In the midst of the solid mass of the tower, it enables the occupants to benefit from the sun and the air efficiently. It is in this space that the heavy duty activities such as cooking, washing, bathing, drying, etc. are usually performed. Owing to the heavy use of the terrace, the floor is frequently maintained by scrubbing it with *birsīm* leaves. Waste matter is thrown down through holes in the rear facades of the tower. These towers are not provided with toilets; people dispose of their waste outdoors.

The floors of the tower are linked by a staircase on the opposite side to the main entrance inside the tower. In the lower floors the staircase is wider and the steps are high, but this changes as we go up, where the stairs get narrow and the steps get lower. This change corresponds to the geometry of the tower in which the base is wider than the top. The walls surrounding the staircase are painted with colourful stripes which correspond to the horizontal and vertical shape of the steps. These painted stripes work as visual signs guiding the users toward the rooms.

Architecture and tribal context

To end this chapter we come to the suggestion (King, 1976, 24) of whether architecture reflects tribal origins. There is a relationship between architectural forms and tribal alliances. Given towers are built only by certain tribes. But this relationship is found on broad levels as it has been described in this chapter. We have seen that the parapet tower is exclusive to the north section of the highlands in territories held by the two tribes of Zahrān and Ghāmid. The duct tower is exclusive to the central and south

sections in territories held by Rijāl al-Ḥajr and ʿAsīr tribes. And the composite tower is exclusive to section B of the region in territories held by ʿAsīr, Shahṛān, and Qaḥṭān tribes. Mud towers are found in territories held by sub-tribes of Shahṛān, and Qaḥṭān. Only in such statements can we identify architecture in tribal terms. But behind this broad classification, ethnic alliances interact heavily, and this makes it very difficult to make sharp and accurate border lines between each type and its immediate ethnic alliance. The clan-form relationship remains a by-product of the geographical and tribal contact. For example the clan of Rabiʿa wa Rufaida is a sub-tribe of ʿAsīr. The clan of Ballahmir is a sub-tribe of Rijāl al-Ḥajr. But the two clans dwell beside each other, and employ the duct heavily in their towers, despite the difference of their tribal alliances. Even in one location which belongs to the same tribe, we find two different styles. For example, Wādī Yaʿūd is occupied by Banī Bishr, a sub-tribe of Qaḥṭān. The residential towers along the upper part of the valley are of the composite type, while the towers along the lower part of the same valley are built of mud. A similar principle can be applied to the entire ʿAsīr region, where each two neighbouring clans use the same architectural language despite the difference of their tribal affiliation.

Conclusion

The classification of the native architecture of the highlands into three zones according to building materials, is probably the easiest way to gain a broad idea about this architecture. This classification is influenced by geography. Along the east-west axis villages and towers change dramatically under the influence of natural factors. Therefore, this axis represents the classification of building types. Along the north-south axis, the architecture changes as a result of using different building materials. Therefore the north-south axis is fundamental to a classification of form. This classification is in compliance with the tribal subdivision of the land, where each tribe

or sub-tribe has its own language of architecture. This however remains a function of the immediate geography, and the physical contact between the neighbouring sub-tribes.

The inaccessibility of the region has kept its architecture intact from outside influence. Some superficial influences can be felt at the periphery of the region. Yemeni influence can be felt in tall mud towers. Using mud courses with narrow windows is a common feature of the east sections of the highlands and mud houses typical of arid climates like that of the central part of Saudi Arabia can also be seen. And we can see the beginnings of refined wood carpentry in the north section of the highlands. However, these influences are superficial. The native architecture of the highlands preserves its own language.

The native architecture of the region did not develop signs and icons. The inferiority of mosque design - and mosques are dwarfed by these towers - indicates that the socio-economic factors manifested in agriculture, shaped the cultural life of the people. It indicates that this architecture is not motivated by religious codes, nor by mythical factors, but rather, that it reflects agrarian communities.

Owing to the continuous warfare between many of these tribes, it has been impossible for the people to congregate in high density, and therefore, they did not develop urban communities. Across the highlands no single city has been built. The existing cities of the region are of recent origin. The native architecture of the highlands is therefore an architecture of villages. Walled villages are absent from this architecture. The absence of city architecture reflects a stateless society .

The drawings indicate that this architecture is carried out, not by an organised labour force, but by simple villagers using simple building techniques. This is illustrated best in two aspects: the random stone rubble , and the primitive wood craftsmanship. Rectangular and standard stone or mud blocks of the type found in buildings of urban communities, which reflect a form of statehood, are absent from the highlands. The inferiority of craftsmen, has led people to rely heavily on bearing walls as the only structural techniques. The invention of the duct in stone towers, as we are going to see in Chapter Five, is a reflection of this situation.

But the most significant aspect of this architecture is the persistence of towers. Hence they form the focus of this thesis. The emphasis is on one type of stone towers : the duct tower. Before studying duct towers, however the influence of natural factors on architecture is the subject of the next chapter.

THE NATURAL FEATURES OF 'ASĪR AND THEIR INFLUENCE ON THE FORM OF VILLAGES IN THE HIGHLANDS

Introduction

This chapter gives a brief description of the natural features of 'Asīr such as topography, climate, geological structure, hydrology, plant cover, and wildlife. Then it examines the effect of these features on a number of villages in the south and the central section of the highlands. Each feature is described briefly and is followed by an analysis of its influence on selected villages.

Topography

The topography of 'Asīr has been described in the introduction of the thesis. However the contour map of 'Asīr and the cross-section (figure 1, adopted from Mauger, [1993] , 6) illustrate the main topographic features. The two main parts, the lowlands and the highlands, are separated by the escarpment line illustrated in red. The drawings also show the gentle leaning of the highlands eastward in contrast to the sharp drop westward to the coastal area.

These three elements: the highlands, the escarpment, and the lowlands, are illustrated in figure 2. The plain to the right hand side of the figure belongs to the highlands. As it approaches the escarpment it drops sharply into the lowlands . This characteristic is typical throughout the highlands with little change. The highlands in

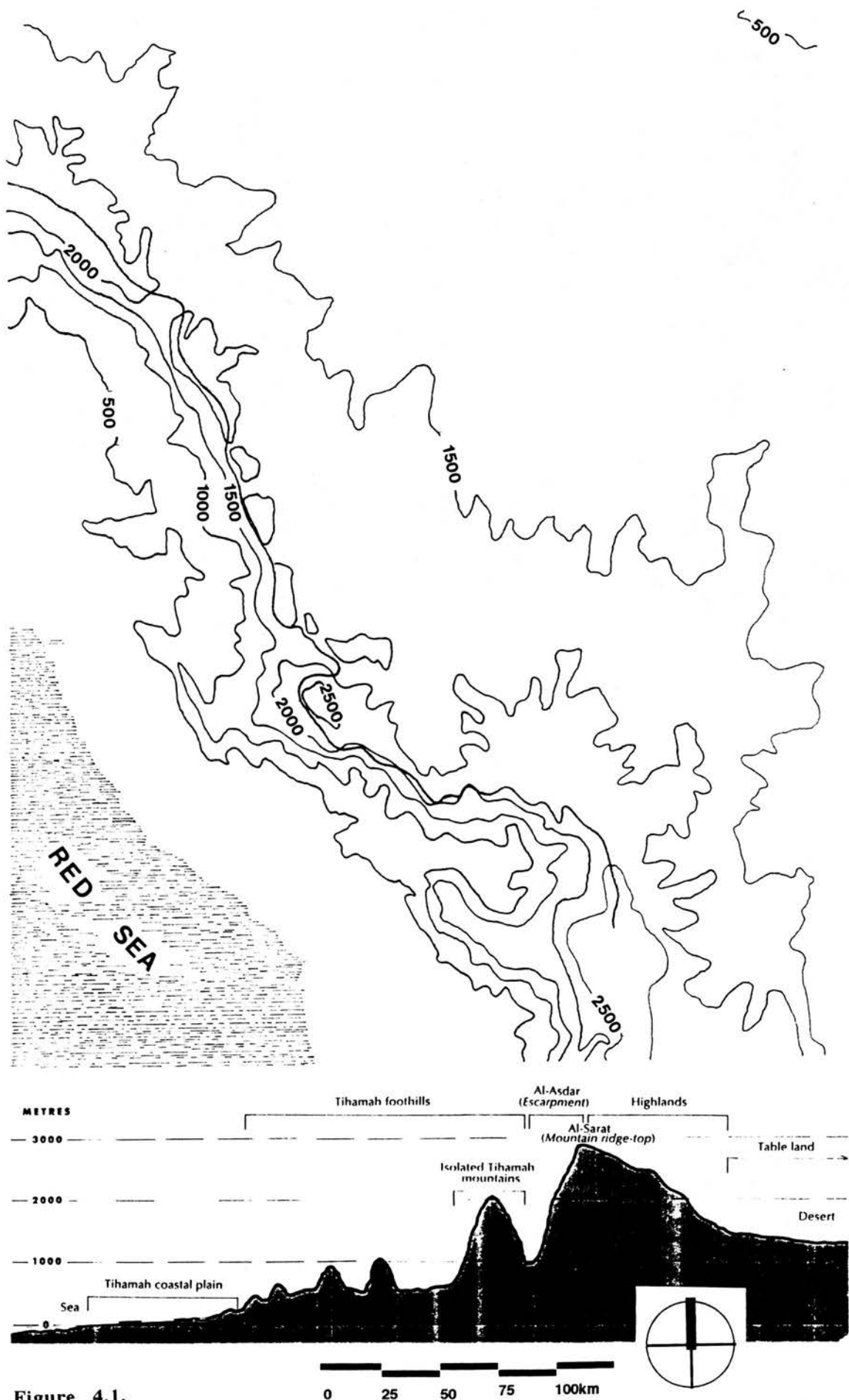


Figure 4.1.

(top) the contour map of 'Asīr, (bottom) a cross section , after Mauger.

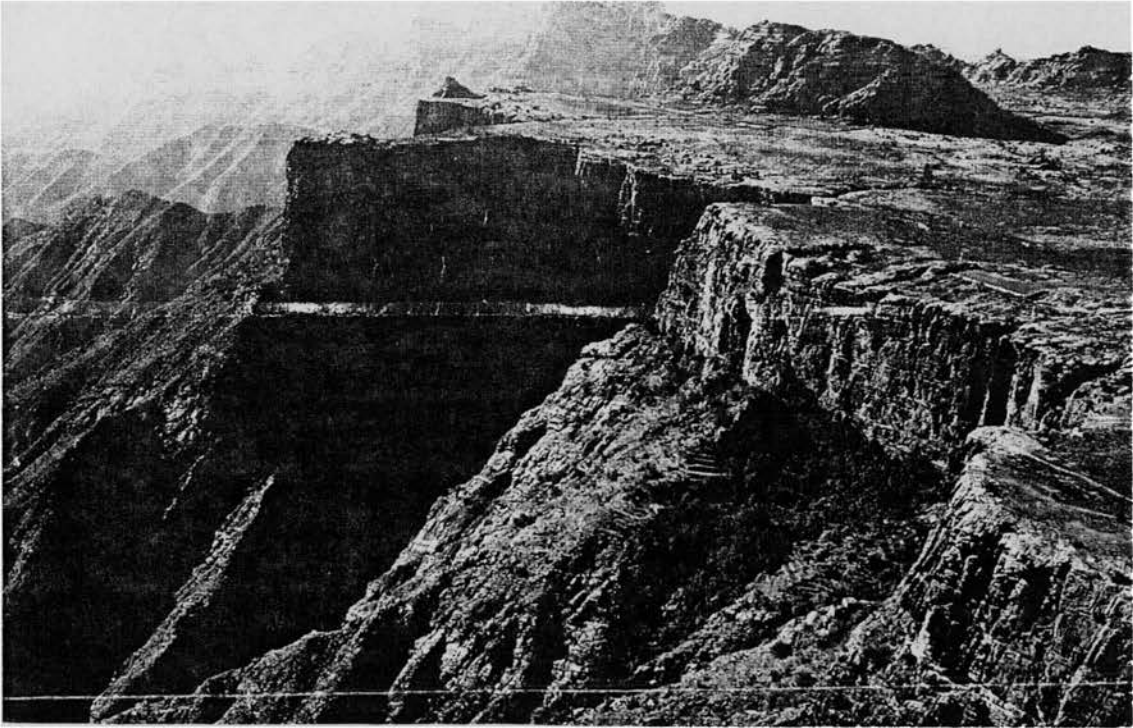


Figure 4.2.

A typical view showing the highlands, the escarpment, and the lowlands

other locations are more rugged, the configuration is more complex, and the escarpment is deeper.

The influence of topography on village form in the central and south sections of the highlands.

Linear and cubic configuration

Topography determines whether a village takes a cluster or a linear form. Owing to the rugged topography of the highlands, most villages along the escarpment

expand in one direction. The linear elevation of al-'Ukās village in the south section the highlands (figure 3) illustrates this feature, where the houses are organised to comply with the contour lines of the village site. This is a typical configuration of stone villages in the south section of the highlands. In the central section of the highlands cubic clusters of stone villages such as that of Āl Zuhair village (figure 4) are common.

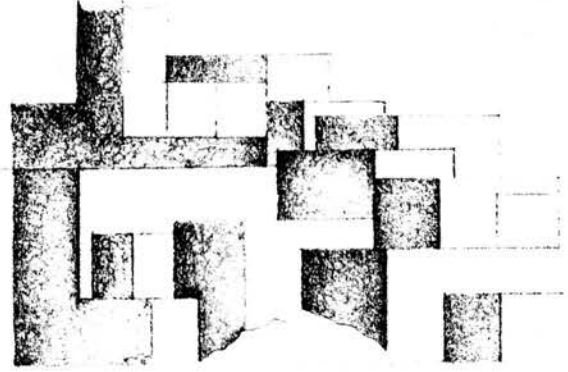
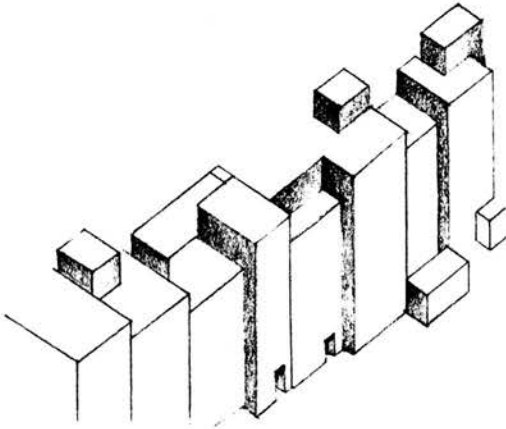


Figure 4.3 (left) The linear configuration of al-'Ukās village. Figure 4.4.(right) The cubic configuration of Āl Zuhair village.

The terraced village

Villages in the central section of the highlands are built to comply with the contour lines of a given site. The village of al-Jamal (figure 5) illustrates this feature.

The village is surrounded on all sides by terraces. The stepping of the terraces continues into the village, where the houses are built, so that the rooftop of each house works as a terrace for the next one, thereby maintaining a terraced form for the whole village. The roofs of the houses step upward, ending with the village tower, looking like the steps of a giant staircase. All this is as a form of adaptation to the local topography of the site. Commenting

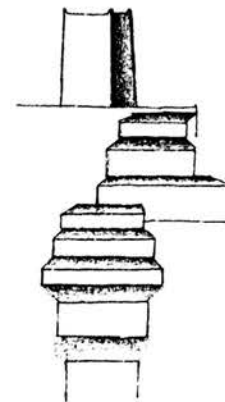


Figure 4.5. The terraced village of al-Jamal.

on a similar feature, Geoffrey King (1986, 80) has described the mountain of Faifa in the lowlands as a " sheer staircase ".

Outdoor staircases

In hilly locations, such as the highlands of ḤAsīr, staircases are essential components of villages as a means of access. The terraced houses are connected by a number of staircases which bring the whole village together. Some of these staircases are made of stone bearing walls, as are the staircases of al-ʿAzīza village (figure 6) in the central section of the highlands. However some of these staircase are made of stone or wooden steps projecting out of the walls of the houses. The staircase is thus a clear reminder of the hilly local landscape.

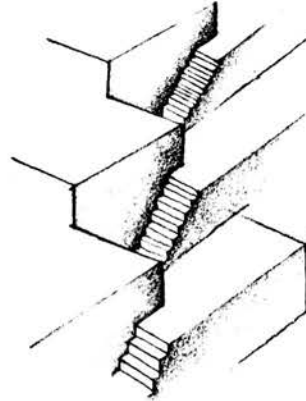


Figure 4.6.
The staircases of al-ʿAzīza
village.

The use of staircases as principal elements of circulation in the fabric of the village finds different expression from one section to another across the highlands. In the south section, staircases are found alongside the interior street of the village. But in the central and the north sections the staircases are provided along the outside walls of the village houses.

Climatic features

Topography influences the climatic conditions of the region. The climate of the

highlands along the escarpment line is characterised by low temperatures, heavy rainfall, moderate moisture, and south-western wind (Ṭālib, 1984, 93) . To the east of the highlands, in the interior section of the plateau, the temperature rises gradually, and the rainfall decreases sharply. This increase of temperature, and the dwindling rainfall, is enhanced eastward, where at the north-eastern frontiers of 'Asīr the climate is desert-like and is characterised by high temperature, low rainfall, and arid wind.

Geoffrey King (1976, 20) has described the climate of the region as follows:

" the climate of the mountains is quite different from that of the coastal plain, despite the short distance intervening between the two; in winter the temperature in the highlands falls to freezing point and the summer remains cool while the rest of Arabia becomes uncomfortably hot."

Figure 7 illustrates the variation of air temperature across the region. According to Ḥaidar (1987, 48) the highlands along the escarpment line have the lowest temperature in the region. As we move eastward of the escarpment line, the temperature rises dramatically. It reaches 40c and more in the eastern frontiers of the region during the summer . The drastic increase in the temperature is true also of the lowlands as we move westward.

Figure 8 shows the air temperature recorded in the city of Abha. According to Tange (1976, 47) the lowest temperature figure is 9c in January. But the temperature depends on the altitude. According to Tange (1976, 46) the city of Abha is located 2100 m. above sea level. Most villages across the highlands are located on higher altitudes. In these villages, like that of al-Sūda located at 3130 m. above sea level, the air temperature must be lower than 9c by at least two or three degrees.

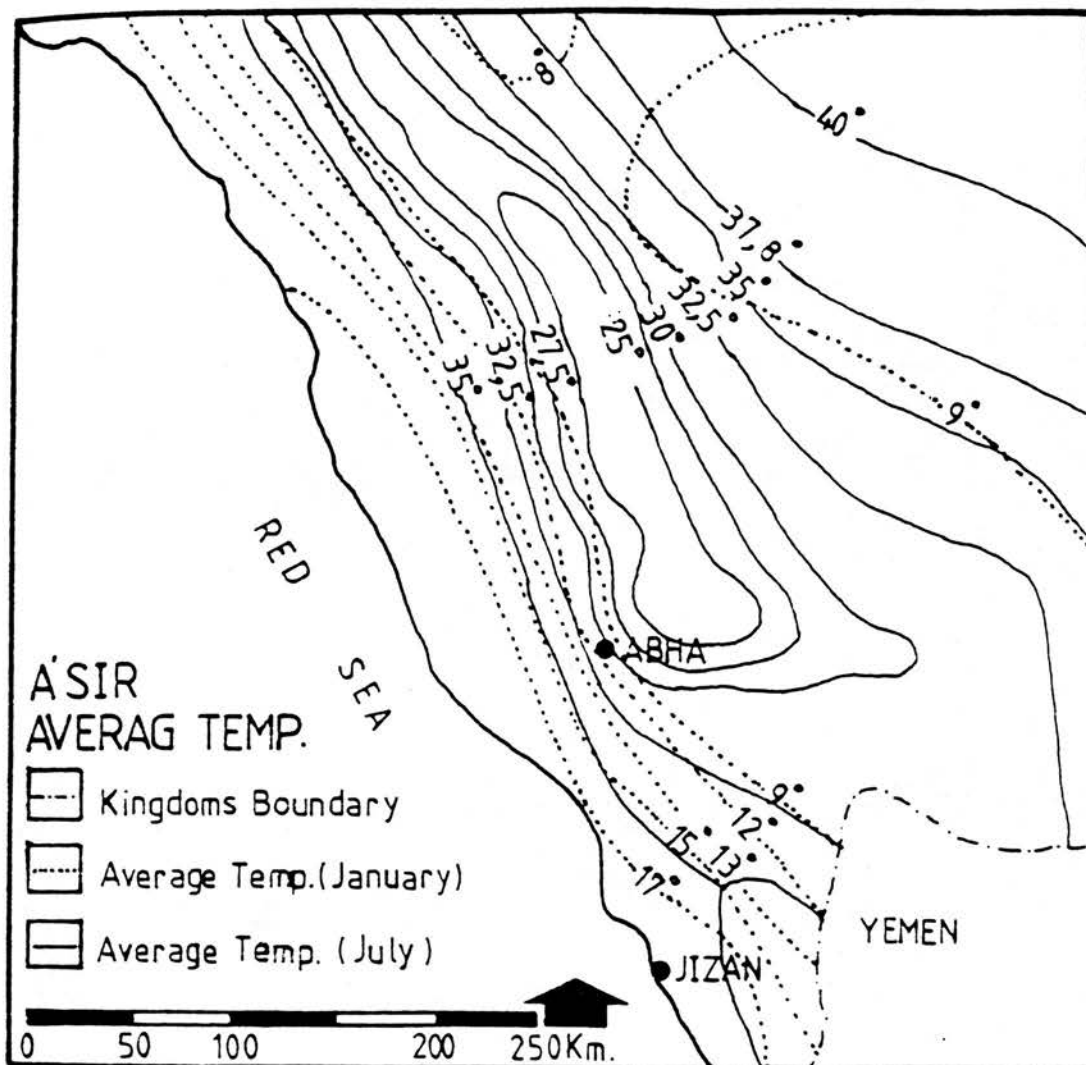


Figure 4.7.
Average temperature of 'Asir n, after Haidar.

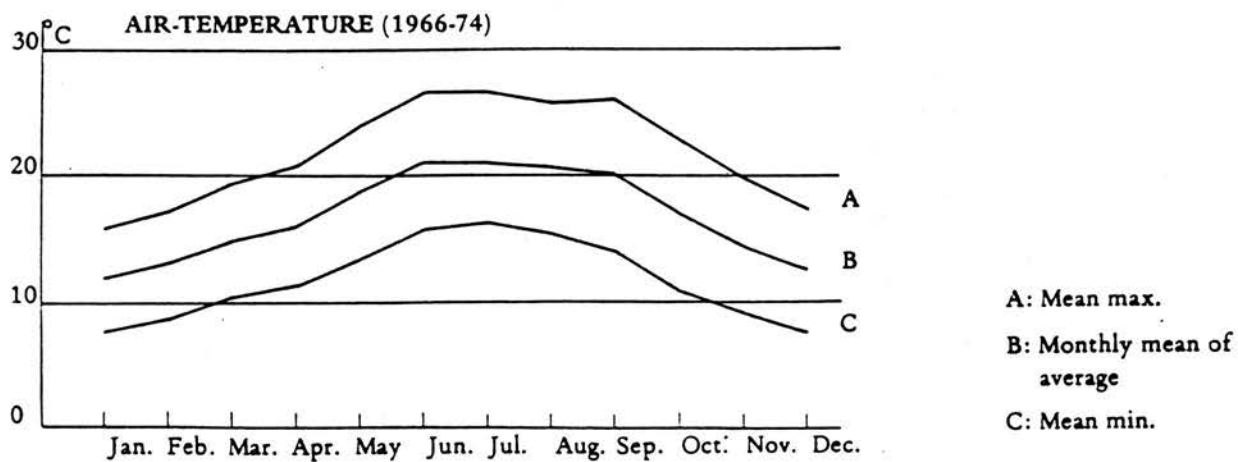


Figure 4.8.
Air temperature of Abha city, after Tange.

There is also another factor that contributes to a lower temperature along the highlands. Fog persists over the highlands, especially in the high altitudes immediate to the escarpment, where stone villages are often built. It persists for weeks or even months, blocking the sun's rays, and depriving the highlands of the warm effect of the sun rays.

Figure 9 illustrates the rainfall records in 'Asīr. Rainfall too is a function of altitude as the highlands intercept the heavily loaded clouds, causing rainfall. According to 'Abd al-Fattāḥ (1981, Map 3) the highest rainfall is recorded on the highlands along the escarpment line. According to Tange (1976, 72) some of these mountains, like that of Tahlal, record 500 mm. per year. According to figure 10, in summer the rain falls mostly in the months of July and August, and in winter in the months of January and February. As we move eastward and westward from the escarpment the rain dwindles sharply to reach 50 mm in the eastern frontiers, and along the coast of the Red Sea. The same principle applies to humidity.

Violent rainstorms accompanied by thunder and lightning are common. Such storms cause violent floods which damage fields and villages along water channels. The last storm of these took place in winter of 1982. In less than fifteen minutes' time, the highlands experienced heavy downpours which destroyed villages, cut the regional transportation network, and took many lives. Huge concrete slabs of bridges on water channels were uprooted (Mauger, 1993, 73) and thrown alongside these channels. Hailstorms are also common across the highlands. Such storms cause violent floods and cause the destruction of grain and fruit harvests. Snow-storms are infrequent. But many people have confirmed snowfall thirty years ago. During that time there were no meteorological stations to confirm the fact.

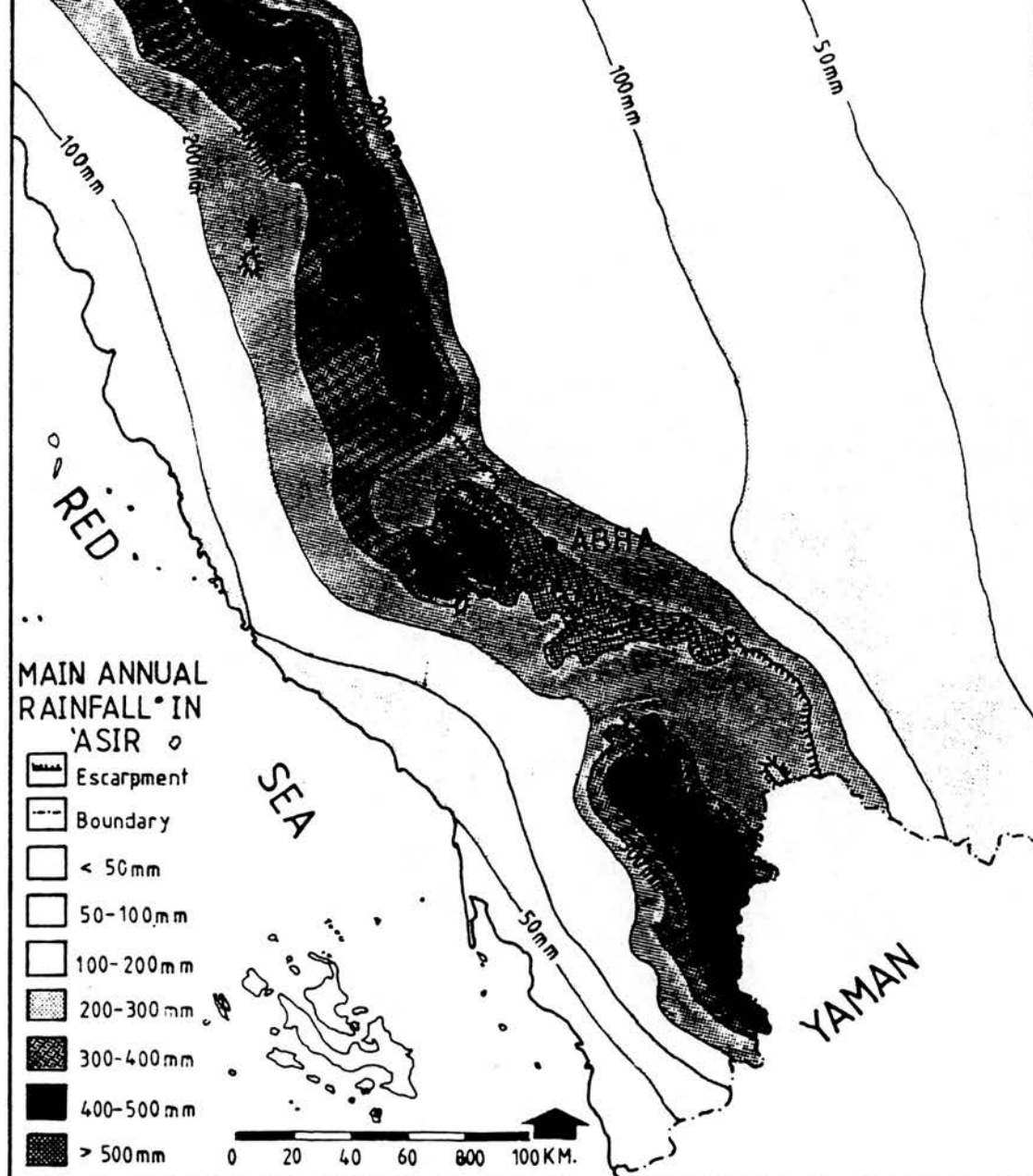


Figure 4.9. Average rainfall of 'Asir, after 'Abd al-Fattāh.

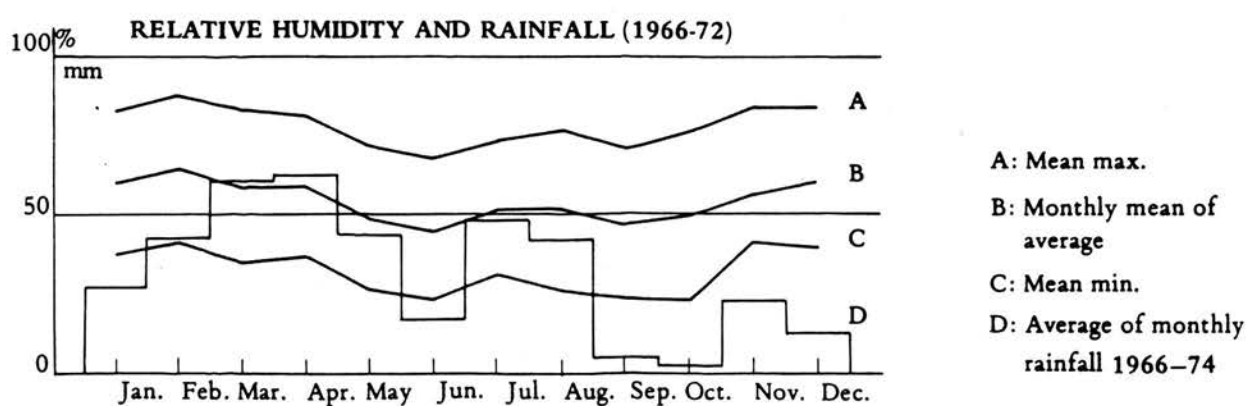


Figure 4.10.

Relative humidity and rainfall record for the city of Abha, after Tange.

The response of village form to climatic features

The selection of building material

Climate influences the form of a village in a number of ways. As a result of the heavy rainfall along the highlands, stone is a suitable material to resist the effect of the rainfall and humidity. For the same reason, mud is not used. A mud house in the highlands would disintegrate rapidly under the effect of the high rainfall.

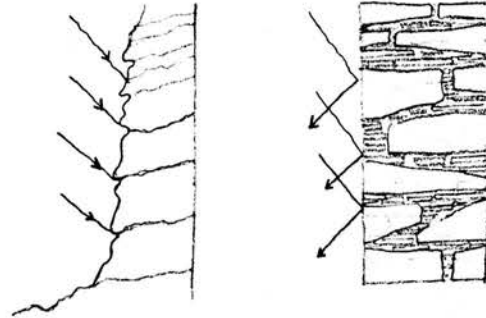


Figure 4.11. The performance of mud and stone walls under the rainfall.

The compact village

Villages along the highlands (figure 12) are built to avoid the infiltration of outdoor air temperature into the houses. Across the highlands, where the outdoor temperature is low, the inside

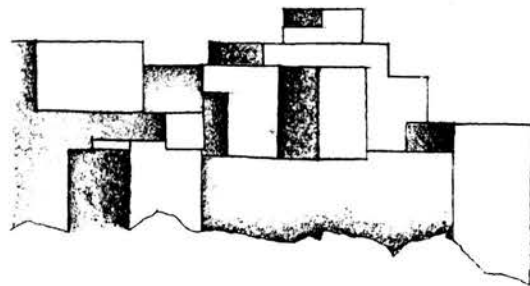


Figure 4.12. The village of al-Saqain in the central section of the highlands.

temperature is usually higher than that of the outdoor temperature, owing to active heating, for example, by using firewood. The compact form is a suitable way to reduce

heat loss. The compactness of the houses prevents the loss of the warm indoor temperature to the outside, and vice versa, by reducing the area of the walls which are exposed to the outside. The compactness of stone villages is an essential feature of all sections across the highlands.

The continuous facade

As a result of the compactness of villages, the houses are built next to each other, leaving no space between one house and the next, as exhibited in the village of Āl-'Ishshān (figure 13). This has resulted in

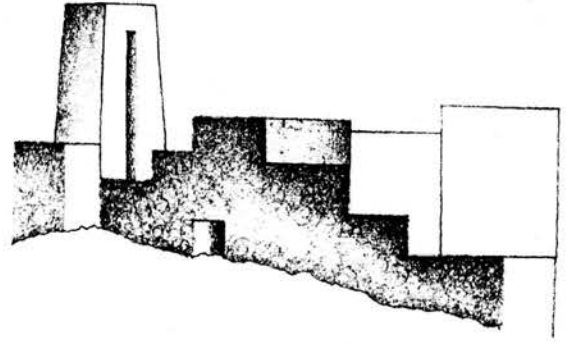


Figure 4.13. The west facade of the village of Āl-'Ishshān in the central section of the highlands

a continuous facade for the whole village, which decreases the area of the exterior envelope of the village, and consequently decreases the amount of heat transfer between the inside and the outside temperature. This leads to a warmer indoor temperature.

Orientation

Owing to the cold air temperatures that prevail along the highlands, especially in winter, the sun is the obvious favoured as a heating source, and therefore villages are oriented to receive the maximum amount of sun's rays. Most villages represented by

the thick line (figure 14) are built along the north-south axis, exposing their walls to the east and the west , and thus receiving the maximum amount of the sun's rays. This is a typical orientation of most villages in the south section of the highlands. Some villages, however, represented by the dotted line, shift their orientation, depending on the local topographic conditions; but the village always maintains one orientation. In these villages the main rooms-like the sitting room, the reception room, and bedrooms- face the sun. The secondary rooms that contain kitchen and storage rooms, and that shelter animals, are left to face the north and the north-west side where the sun is less needed.

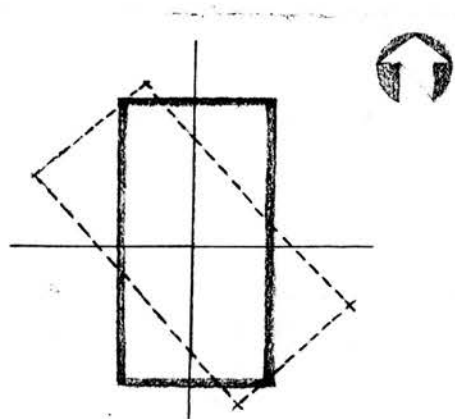


Figure 4.14.

Typical orientation of villages (bold line) , and minor orientation of stone villages (dotted line).

Minimum exposure to wind

The prevailing wind in 'Asir comes from the south-west. In winter the cold wind blows also from the north-west. Fog, which is persistent along the highlands, causes low temperatures as it blocks

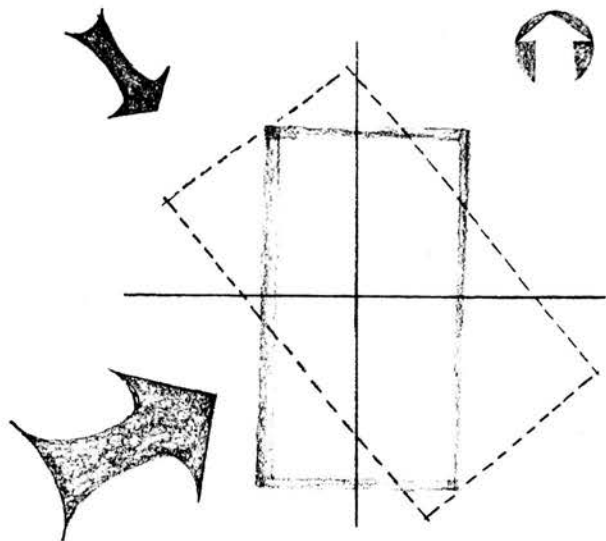


Figure 4.15. Typical orientation (bold line) , and minor orientation of villages across the highlands (dotted line)

the sun's rays, reducing the outdoor temperatures, and drastically reducing visibility. Along the highlands, wind and fog are undesirable because they reduce the outdoor temperature. Villages across the highlands are built to avoid exposing their walls to the direction of the wind and minimise the thermal interaction between the indoor and the outdoor. Therefore villages are oriented, as indicated by the bold line along the north south axis in figure 15. Meanwhile, the orientation along the east-west axis, represented by the dotted line, is abandoned. Sometimes the immediate topography provides protection against the wind. The main rooms for living, sleeping, and reception are oriented to face the sun, while the supporting rooms like kitchens face the north side.

Small indoor spaces

Indoor temperatures are influenced by the size of the space. Across the highlands the rooms are always small. The smallness of the interior spaces can easily be recognised in these villages. The ceilings are low, the rooms have narrow spans, and the size of the houses is always small. Smaller volumes mean warmer temperatures as these rooms need less amount of heat generated by active means like using firewood.

Thick walls

The thickness of the exterior walls is responsible for determining the speed and the amount of heat transfer between the indoors and the outdoors. In stone villages across the highlands the thickness of walls ranges from 60- 90 cm. In some villages the thickness exceeds one meter as stated by Prochaska (1976, 124). Such thicknesses slow the process and the amount of heat transfer between the inside and the outside. As Galea (1987, 257) notes:

"The thick walls of mud or stone and the deep mud roof all have a high thermal capacity which serves to even out the internal temperature in relation to the large diurnal variation."

During the night, indoors is warmer than outdoors because firewood is used. The thick walls keep the heat inside. As in the daytime, the outdoor temperature, which has been raised by the sun, infiltrates slowly into the indoor spaces. By the evening the active heating causes a higher indoor temperature.

The lack and the small size of doors and windows

To maintain warm temperatures indoors, especially during the winter, openings are avoided, because they contribute to the loss of the indoor heat to the outside. Joseph Galea (1987, 257) has also pointed to the small size of the openings of stone villages:

"Openings are kept small also to minimise heat transfer, and protected with timber shutters."

Windows, used to light the rooms, are small and few. They are only provided in the walls which are not exposed to the prevailing wind. This explains the bold and uncompromising character of the west and north facades of those villages which are exposed most to wind.

Doors are unusually small, so that people for ergonomic reasons, have to bow when they go through these doors. The small size doors in the architecture of 'Āsīr is explained, among the natives, by the scarcity of wood suitable for large doors and windows. But the point is arguable. The local plant cover, as we will see later, provides raw materials. It is quite possible that the small size of doors and windows

are remnants of similar traditions found in defensive and watch towers. Although the climatic interpretation is valid where large doors and windows are avoided to minimise heat loss, I believe that the smallness of doors and windows is motivated also by the inferiority of carpenters to farmers; craftsmanship in wood is held in low esteem by farmers.

However the size of doors and windows changes from one section to another across the highlands. In the south section, where the temperatures are at their lowest, the windows are scarce indeed, and the doors are very small. But as we move northward to the central and north sections, openings (both doors and windows) get larger. This is due to the rise of temperature along the north axis. The gradual increase of window and door sizes as we move northward is a genuine indication of a gradual response to the outdoor climate.

The fact that most of these features are found in mud villages in hot climates, can be understood properly if the thickness of walls is taken into consideration. Walls made of mud courses, owing to their structural deficiency, are not as thick as stone walls, although they are probably more suitable for preserving temperatures. Increasing the thicknesses of stone walls in compact villages across the highlands slows down heat transfer from inside to outside and preserves higher indoor temperatures in winter. Observation and experience suggests that in summer time the difference between internal and external temperature is slight.

The village of al-Sūda

The village is situated at an altitude of more than 10000 feet above sea level (Tange, 1983, 34) and is thus the highest settlement in Saudi Arabia. Some of the features

described above apply to the village. The integration of the village block into the surrounding terracing fields has been noticed by Philby (1976, 159):

"I was up at first light on the morrow, about 5 a.m., to see the sun rising out of the distant eastern haze and lighting up the golden corn-fields at my very feet, terraced down a wide, curved slope of the hill, in the shape of an enormous Roman theatre, with the juniper fringe of Ghawa to serve as stage."

The compact form of the village is confirmed by Philby (1976,159) in this statement:

"Sūda was a very curious village, not large but consisting of a solid block of dingy , single-storey houses with no streets or alleys and no doors except in the houses forming the periphery, whose entrances all faced outward."

This description suggests a compact form of village houses, an absence of openings and confined spaces inside the houses.

The cold outdoor temperature experienced by the local people has also been described by Philby (1976, 160) :

"My declared passion for fresh air and my confession of inability to sleep except in the open air shocked my hosts, who warned me that the night air of their mountains was exceedingly chilly. I replied that I came from a country with colder air than theirs, and eventually it was good-humouredly agreed that I should sleep on the roof."

The use of firewood (accompanied by incense) to warm the small rooms is also recorded by Philby(Philby, 1976, 160).

The behavioural aspects and the climatic features

Villages across the highlands are located outside the domain of studies carried out by governmental departments. Unfortunately the climatic statistics of these villages are scarce, but I will describe some behavioural aspects which suggest how people reject the outdoor cold and retreat indoors in highlands area.

Partial occupation of villages

The unpopular cold temperatures of the highlands have always forced people to abandon their villages in winter, and they have traditionally moved to the warm lowlands of Tihāma, where they spend the winter-time practising agriculture and looking after their flocks. When the temperature rises in summer the people ascend back to their villages across the highlands to benefit from the rain and practise agriculture.

Clothing

Clothing is a reflection of climatic conditions in the region. Heavy clothing is a distinctive feature which typifies the dressing of the highlanders, in contrast to the light and short costumes of the people in the lowlands. A quick glance at the images in Mauger's *Flowered Men and Green Slopes of Arabia* shows the people of the lowlands wearing light costumes, exposing their bodies to the breeze to reduce the skin temperatures. People across the highlands are always wrapped in thick woollen multi-layered garments to avoid the cold.

Avoiding the outdoors for social gathering

A proverb which circulates widely in the lowlands of Tihamah says “ *Yā ḥasrat im gamar fikum ya ahl im sarā* ” . This can be translated as “ Oh, you residents of the highlands, where the shining moon is a complete waste ” . This proverb contains climatic and behavioural clues . The lowland is often covered by clouds which block the moonlight. The people of the lowlands spend the night outdoors because of the high temperature and humidity inside the houses. As a matter of fact, spending the night in groups outdoors is a social feature which distinguishes the people of the lowlands from the highlanders. But the cloud cover deprives them of moonlight which contributes negatively to the social atmosphere of these gatherings. Contrariwise, the people of the highlands spend the nights inside their houses avoiding the cold. The people of the lowlands criticise the highlanders, for not enjoying the moonlight by staying inside their houses. They think that clear and bright moonlight is wasted on highlanders who do not deserve it . This is only a poetic view. In reality, the people of the lowland do not think and have never thought of going for outings in the highlands. As a matter of fact, the people of the lowlands scarcely go up there because they fear the cold.

On the other hand, in the daytime the people of the highlands gather in the public yards of their villages or alongside the walls of their houses , in the morning sun shine hours to enjoy the warmth . This is known as *tashurruq* , which literally means the exposure to the morning sun seeking its warmth. In the lowlands people take shelter from the hot sun in the shaded places of their houses, exposing themselves to the breeze.

Geology

The geology of 'Asīr (figure 16) is rocky in most parts. Across the highlands the rocks are of granites , schist, or basalt, and form the Arabian Shield (Tange, 1976, 64) . In the north section of the highlands the rocks are mostly granite in dark grey shades. In the central section of the highlands the rocks are granite with tan and dun colours. Huge boulders of rocks and sedimentary rocks are found in many locations in this section. In the south section the rocks are similar to those of the north section, but they have a variety of colours which ranges from dark grey to reddish brown. In this section also white quartz stone is found in the mountains. Sedimentary rocks are found in this section but in few locations. Along the escarpment in the extreme south section of the region volcanic rocks of different sizes are also found.

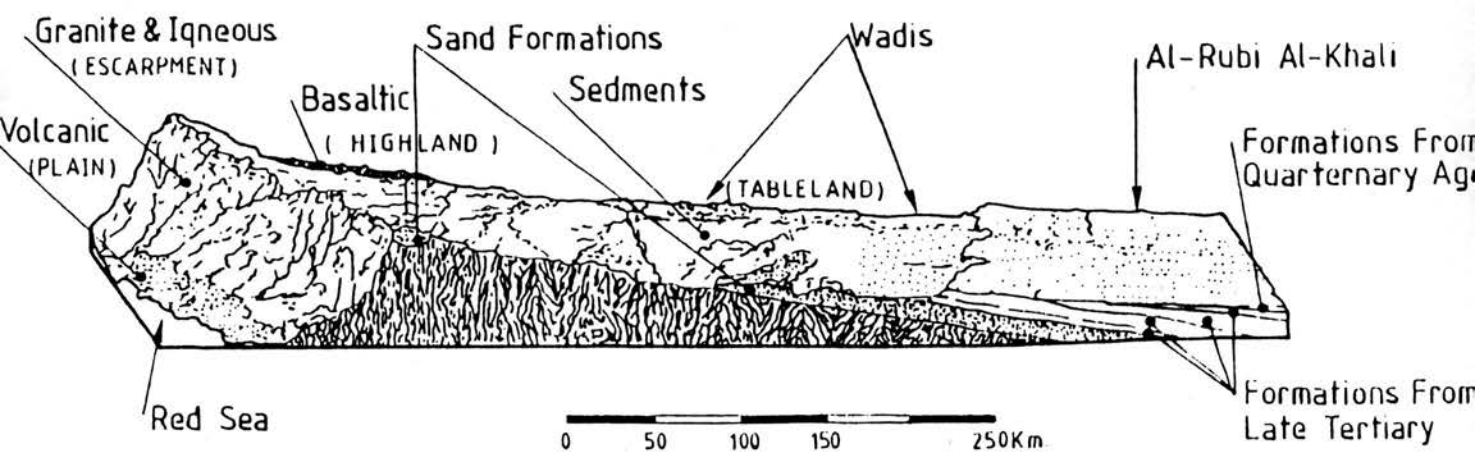


Figure 4.16.

The geological formation of 'Asir, after Haidar.

Considerable proportions of deposits cover a large portion of the plateau , the watercourses, and the eastern slopes of the highlands, to the east of the escarpment. These deposits consist of finer sands, and of gravel derived from the disintegration of rocks on higher foothills, which run through the water courses and are deposited extensively in the plains, along the channels of Wādī Ranya, Wādī Bīsha, Wādī Tathlīth , and Wādī Najrān .

The influence of geology on village form

The prevalence of granite , basalt, and schist stone across the highlands has made stone the major building material. There are various sizes of stone used in the architecture of the highlands. There is the hard stone used as a structural material to carry the loads of buildings . There is also the thin type of stone used to fill cavities of walls rubbles. The lintels of doors and windows are often made of stone. Some kinds of sedimentary rocks are powdered after firing and are used as mortar and for cladding (figure 17). The stones of quartz found in the mountains are widely used for decoration in the exterior walls (figure 18) around windows and loopholes.

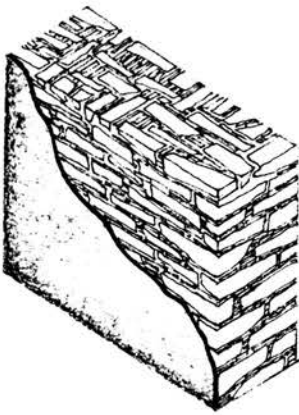


Figure 4.17.
Cladding of stone walls.
for decoration

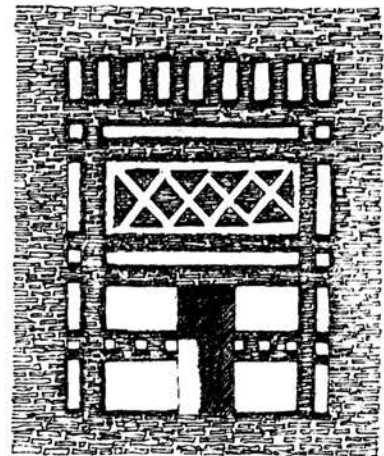


Figure 4.18.
Using the white stone of quartz
around windows

The use of stone in the architecture of zone A of the highlands is described as follows by Galea (1987, 250) :

" the stone building of 'Asīr is based on garrotted masonry techniques, a dry method comprising large stones trimmed to the outside face, packed with small laminates. The coursing is horizontal although irregular, but is generally of high quality."

The colour of stone used in architecture reflects the geological structure of the highlands. In the north section stone walls feature dark grey colours. In the transition zone between the central section and the northern section, stone takes on a brownish look. In the central section, the colour of stone is tan in light and dark shades. In the south section, where the colour of stone ranges from grey to reddish brown, so do villages and towers. Therefore stone architecture across the highlands is a close reflection of the geology of each section.

But stone is used on a massive scale in the highlands because it is considered a durable material . Stone villages and towers are more renowned than their counterparts of mud. The durability of stone architecture has always been a source of pride for the highlanders.

Soil across most parts of the highlands is loose. It holds no water and easily disintegrates under the heavy downpours. Therefore, mud, used as a finishing material, in floors, walls of the interiors, and as a roofing material is difficult to find across the highlands. Instead it is brought from the fields or from the interior sections of the plateau.

Hydrology and its impact on the location of villages

The hydrology of the uplands is influenced by their geology. In the highlands, where the granite and the schist rocks are dominant, water is quickly drained down into the *wadi* systems. Across the highlands water springs and a number of water bodies (*ghadīr* , pl. *ghudrān*) are found isolated alongside the escarpment ,or in the beds of small water channels.

The landscape of the uplands is penetrated (figure 19) by a number of water channels (*wādī* pl. *awdiyah*) . These channels are fed by a large number of tributaries running from the foothills and the peaks of the highlands. These channels are narrow at their beginnings, but as they advance they become wider until they vanish in the sands of al-Rub' al-Khali desert. Starting from the north, the most prominent channels of the uplands are: Wādī Ranya , Wādī Bīsha and Wādī Tathlīth. These channels run from south to north and finally bend eastward reflecting the topographic features of the uplands. Wādī Ḥabūna, and Wādī Najrān at the south end of the uplands, run eastward. According to Ḥamza (1968, 46), the water channel of Bishah, which receives most of the small *wadis* east of the escarpment line, is the widest and the longest of these channels. Before vanishing in the sands, these channels feed the underground reservoirs of the interior section of the plateau with a sufficient quantity of water.

The availability of water determines the supporting of settlements. In the highlands along the escarpment, rain-water is the principal source of irrigation. Rain-water is intercepted by artificial channels leading to the fields. Water for domestic uses is brought up by digging shallow and narrow wells, in locations where the underground water is trapped. A principal method of getting water is to trap the rain-water in cisterns.

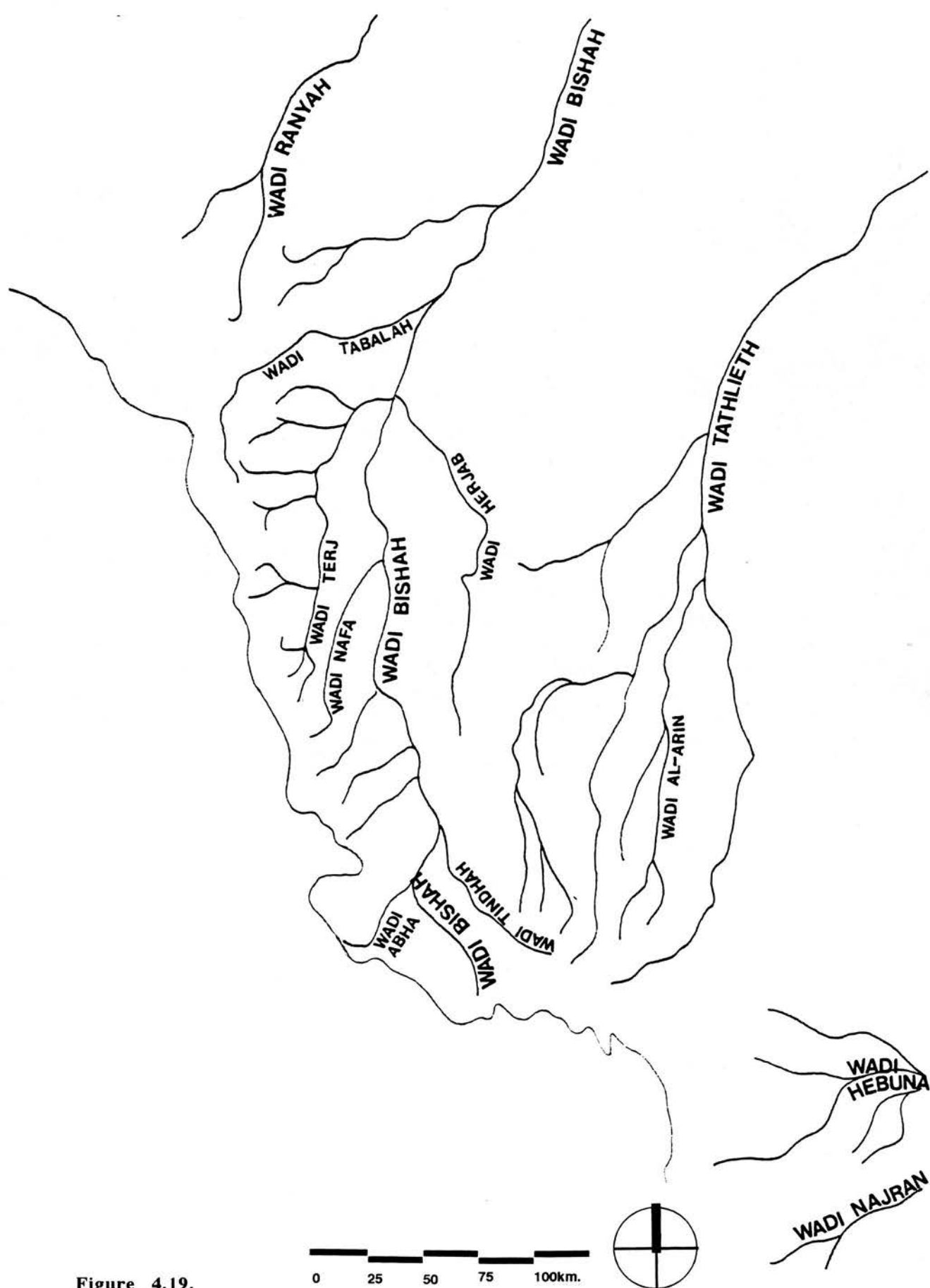


Figure 4.19.

The principal water channels across the uplands of 'Asir, after Ḥamza

Owing to the high temperatures across the plateau , surface water is scarce. This explains the disappearance of permanently occupied villages across the plateau, where the only method of irrigation and of getting water for domestic use is by digging deep and wide wells to reach the water trapped deep underground.

Plant cover

Plant cover across the uplands is of course influenced by the topography and the climatic conditions. In the highlands the *Juniperus procera* woodland (‘ar‘ar) is found alongside the escarpment (figure 20) . It benefits most from the high rainfall, humidity, and the cold temperatures. These trees are also found in the high mountains of the lowlands and alongside the escarpment from the west. They come in large and small sizes. As we move eastward these woodlands become depleted as they mingle with other types of vegetation.

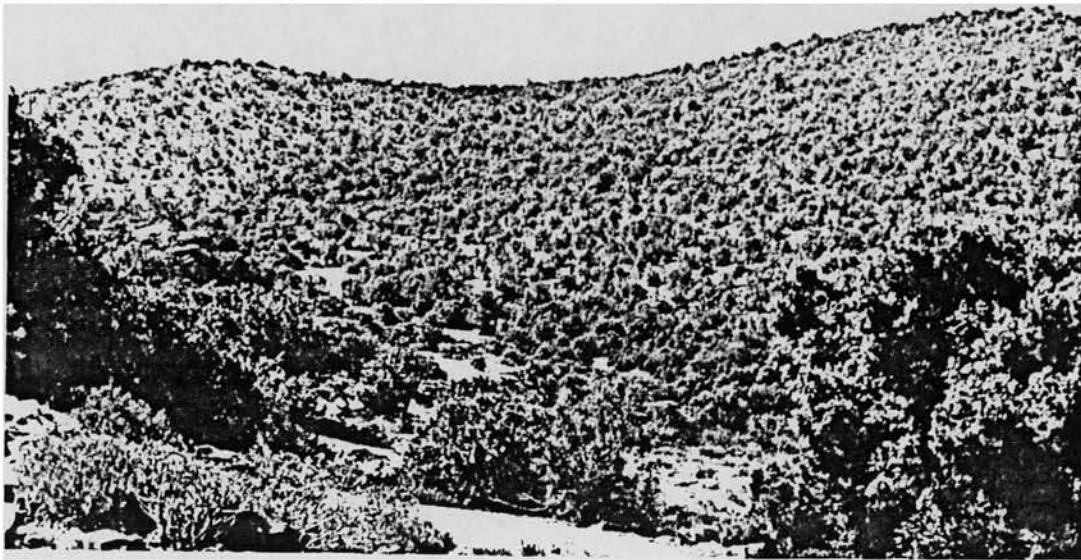


Figure 4.20.

***Juniperus* woodlands along the escarpment.**

Among the *juniperus* woodlands a number of shrubs also is found. According to Mijāhid (1978, 32) these are the most common types: *Dodonea viscosa*, *Rumex nervosus*, *Pandanus tectorius*, *Mentha longifolia*, *Mentha microphylla*, *Ficus salicifolia*. The local names of these plants, respectively are: *shathth*, *‘uthrub*, *kādī*, *nā’ nā*, and *fix*. These shrubs come in different grades of green colours, and in different sizes, and they have pleasant smells which make them primary sources of local perfume traditions. Frankincense (*libān*) trees are found (Philby, 1976, 403) in some locations of the highlands.

To the east of the escarpment, wild olive trees, known locally as *‘itm*, are found in the central and the north sections of the highlands. Tamarisk trees (*athl*) are also found east of the highlands. These trees are also found in the beds of water channels where there is enough water to sustain them. Wild fig trees are found alongside water channels and beside water wells. Giant fig trees (*tāliq*) are also found in some locations. Shrubs in these sections are less numerous and have a desert-like character.

Across the plateau, where the rainfall and humidity records are at the lowest, and where the temperature records are at the highest, much of the larger vegetation consists of acacia trees. The most common of these are: *ṭalh*, *samr*, *ghard*, and *sarw*. These trees are scattered in the beds of water channels across the plateau such as those of Bīsha and Tathlīth. Some of these trees reach gigantic sizes.

The impact of plant cover on village form

Across the highlands the *juniperus procera* (*‘ar‘ar*) is used to support roofs and floors (figure 21) and as lintels of doors and windows. On account of its durability

the use of this type of wood is a matter of pride among the local people. Owing to the absence of native carpentry traditions, wood is used with little refinement in villages across the highlands. Trunks of shrubs are used as the finishing material of floors. Some shrubs are used for paint after burning. In the central and north sections of the highlands, wild olive trees (*itm*) can also be used to support roofs and floors. Across the plateau where *ar ar* wood is in short supply the people use tamarisk wood (*athl*) instead. Acacia wood is rarely used in buildings; it is too irregular and difficult to manage.

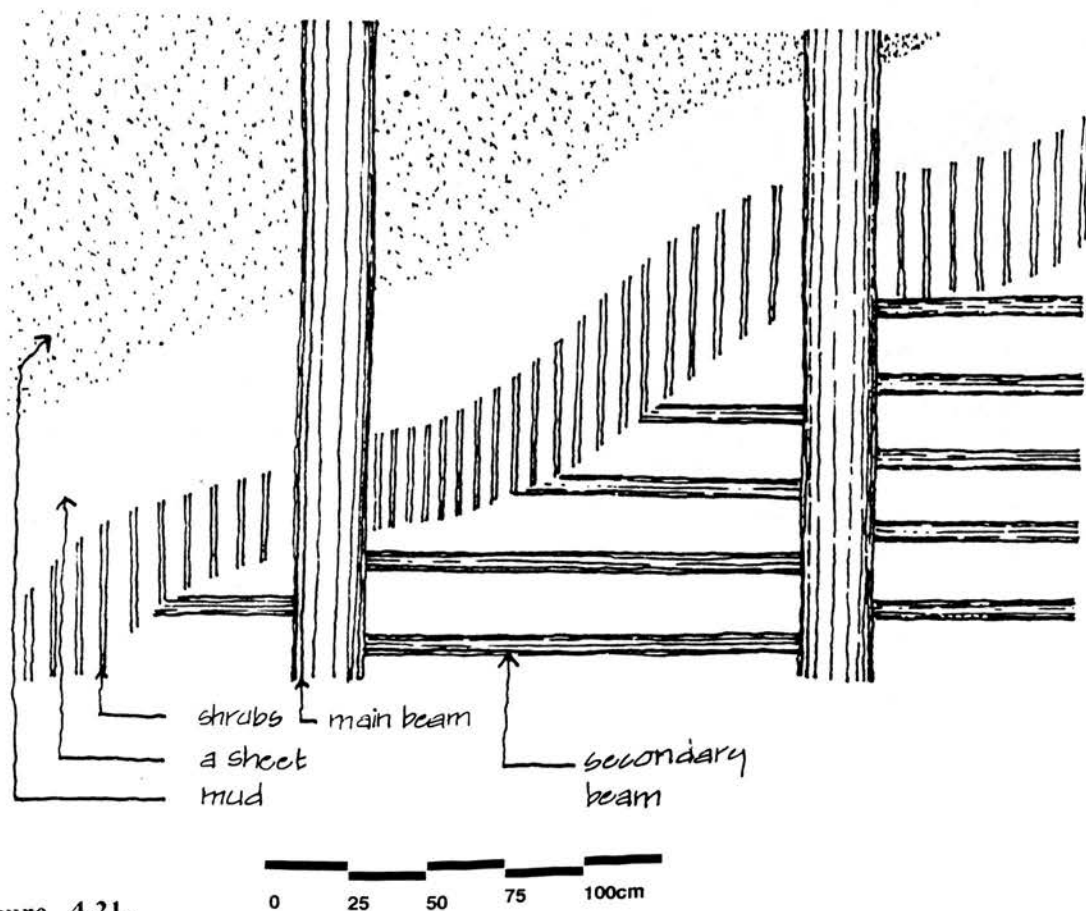


Figure 4.21.

Using wood in the construction of roofs and floors.

Wildlife

ʿAsīr hosts a wide range of animals and birds. Predators like leopards, wild cats, wolves, hyenas, foxes, and baboons (figure 22) roam the highlands. They are found most in the escarpment where they live in caves and cliffs, in isolation from the people. Attacks by predators on the livestock and on humans are common. Wolves are the most feared animals because they threaten the flocks of goat and sheep .They attack individually or in groups. Grazing is limited to locations which are free of these predators. Reptiles are found across the region. Conies and wild rabbits roam the highlands and the plateau. The lowlands are the home of many kinds of snakes including the legendary flying snake. Sparrows nest in trees beside the fields and threatening crops. Falcons and eagles are also found, especially in cliffs of the escarpments. Migrant birds cross the region from time to time. Cyclical waves of locusts represent a menacing threat to grain harvests and to the livelihood of the people.



Figure 4.22.

Baboons along the escarpment near Abha, after Āl Saʿūd.

Conclusion

The high altitude of the uplands has created a local climate across the highlands, where the temperature is cold, the rainfall and humidity are relatively high, owing to the factor that these mountains intercept the loaded clouds coming from the south-west basin of the Red Sea. The compact villages across the highlands, and their design features, as briefly described in this chapter, reflect the collective attitude of their inhabitants in protecting themselves from the cold.

The rugged topography of the highlands has pushed villages to high locations, to spare arable land and to avoid the erosion caused by violent floods. The geological formation of the highlands makes stone the major building material. It also meant that the unusually soft local mud was scarcely used in the building of these villages. People employ stone wherever possible as a response to the rainy humid climate.

We can in fact explain the architecture of the entire region in the light of these features. But natural features, no matter how powerful they are in determining the form of the local villages, are not the only forces that shaped them. Cultural factors are also involved. This is the focus of the next part of the thesis.

PART II: STONE DUCT TOWERS

THE DUCT: DEFINITION AND PURPOSE

Introduction

The common feature that links the towers under discussion in this chapter is the duct which runs along the main facade of each tower, dividing it into two symmetrical halves. The size of the duct is different from one tower to another. The purpose of the duct is the particular focus of this section. I will single out a number of towers which are different in purpose, size, context, and are dispersed along the southern section of the highlands. Then I will investigate the possible options that could have lead to the invention of the duct.

I would first to note the description made by two authors who had observed these towers and then, to analyse what interpretations they both gave them.

Discussing the architecture of south-western Saudi Arabia, Geoffrey King (1976, 26) has written :

" In the north of the area are tall tower-like buildings rectangular in plan, and finely built in stone with inward sloping walls reaching as high as 10 meters or more. Running up the tower facade is a shallow recess which divides the facade into two equal halves. "

And in a similar account Theodore Prochaska (1977, 123) has written :

" The second type of house , also of stone, is tower like with slit windows, and has a runnel from the roof to the ground hollowed out in the middle of the wall."

Both accounts were dependent on visual observation, but the purpose of the duct was not discussed in either statement. The term used by second author - "a runnel" - implies a device to drain water downwards. But this suggestion soon disappears for more than one reason. The duct in some towers never reaches the flat roof of the tower, therefore, there is no way of using it as a channel to drain rain water. Duct towers do not contain chambers such as bathrooms, which dispose of water, therefore the suggestion that the duct is used as a lavatory is also easily dismissed.

Classification of the duct types

A word must be said about the term used to describe these towers. The word "duct" comes from the Latin verb ducere, "to lead." In duct stone towers of ʿAsīr the duct is used to propel missiles dropped from the top of the tower onto the heads of invaders. In this respect the function of the duct is similar to machicolation gates in protective walls around cities, and duct towers are like gates fortified in this particular way. This indicates the defensive purpose of these towers. There is no indication that I have discovered in field trips to the effect that the duct is associated with any form of sacrifice.

The towers under discussion in this chapter are defined according to the way in which the duct ends up. At this stage, with little being known about ducts, or of the purpose behind them, this is the best way to identify the towers. According to this feature a number of varieties of duct tower could be defined :

-A tower where the duct ends above the mid-height of the tower. The duct of the grain tower of Fāḍīl (figure 1) and the duct residential tower of al-ʿUkāṣ village (figure 11) are examples of this type.

-A tower where the duct runs all the way up without interruption. There are many examples of this type. The three grain towers flanking the village of al-ʿAuṣā' (figure 3) and the watch tower of al-Malāḥa village (figure 8), and the watch tower of Wādī ʿUshrān (figure 9) are of this type.

-A tower where the duct is terminated at the base of the roof line of the tower. There are many examples of this type. The defensive tower of al-Makhaḍ village (figure 4), the defensive tower of Āl ʿIshshān (figure 5), the watch tower of al-ʿAīn village (figure 7) and the residential towers of Mṣannif (figure 10) and ʿAzīz (figure 12) are of this type.

-A tower where the duct terminates into a projecting niche' over the main doorway. The towers of Raida fortress (figure 6) are examples of this type.

-A tower where the duct terminates at least one floor below the roof line of the tower. The grain tower of al-Ṭāl'ī in Zahrā village (figure 2) is of this type.

These definitions are superficial. But they must give us clues for the purpose of the duct in every tower. When I asked the people about the purpose of these ducts, they gave me the same answer; it is to drop missiles over intruders by defenders retreating inside the towers.

Secondary interpretations of the duct

I will soon come back to this account and examine the defensive interpretation, but first I will discuss possible other interpretations that can explain the duct.

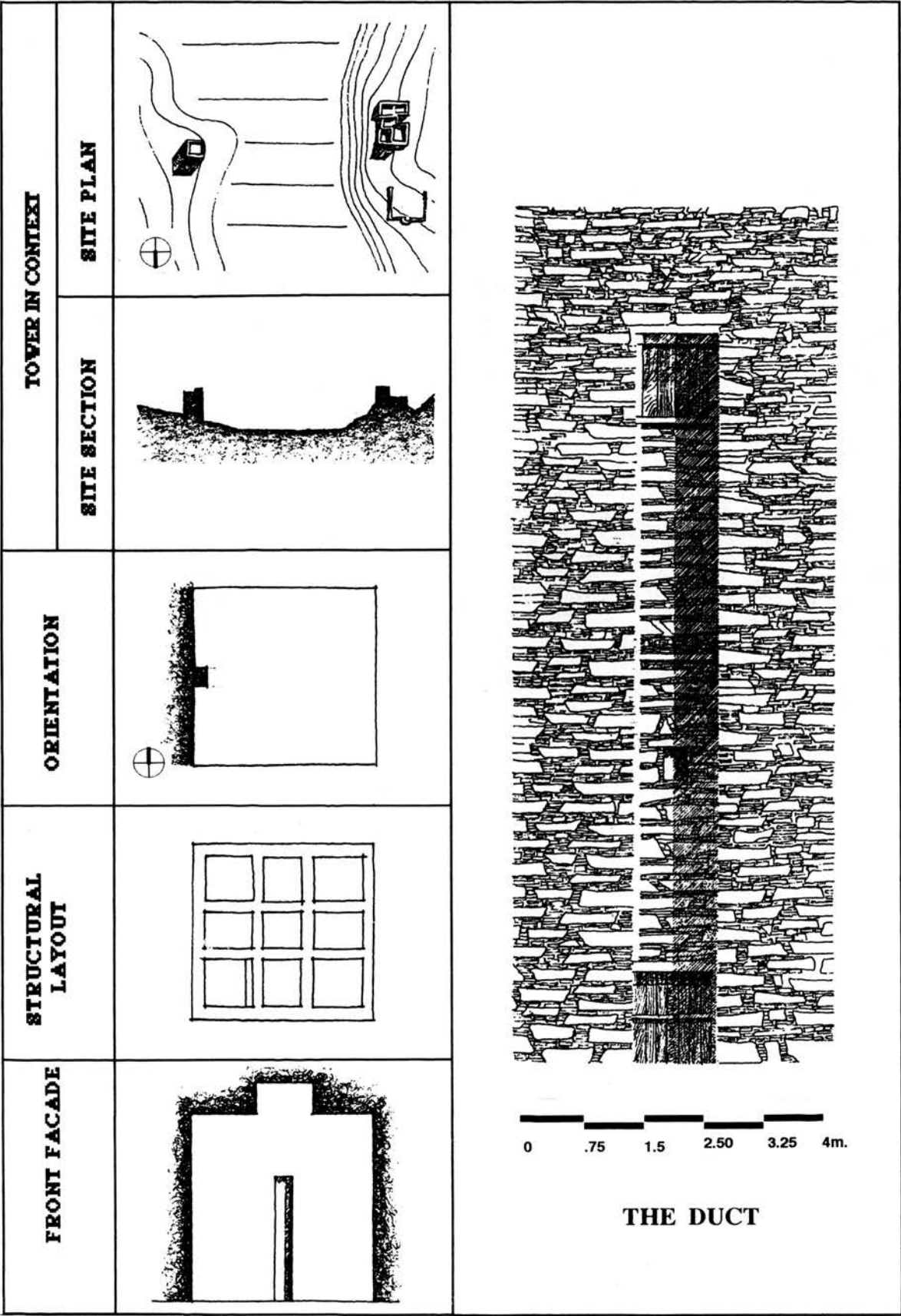


Figure 5.1.
The grain tower of Fādīl in context, with its duct.

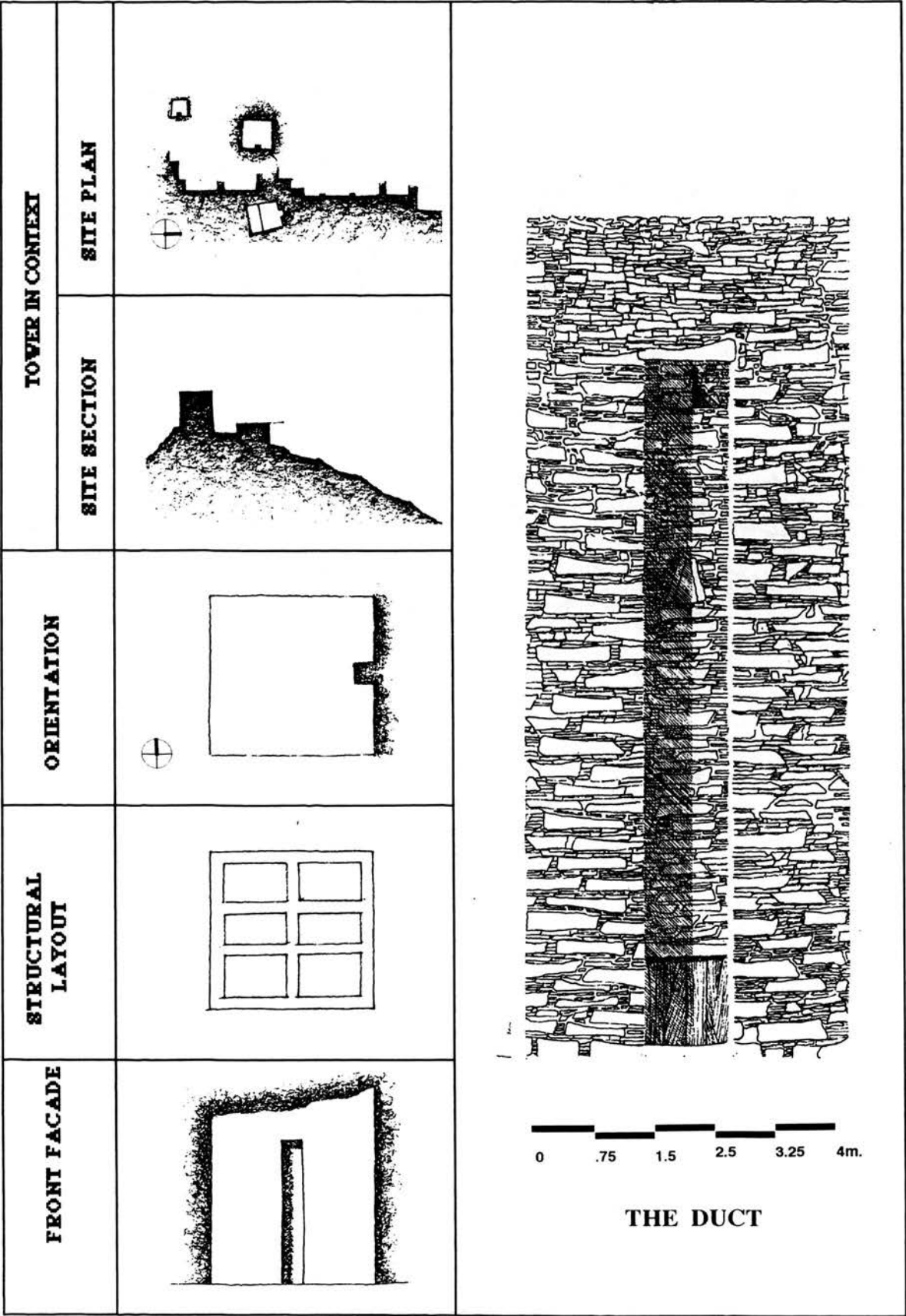


Figure 5.2.

The grain tower of al-Ṭāl‘i in context with its duct.

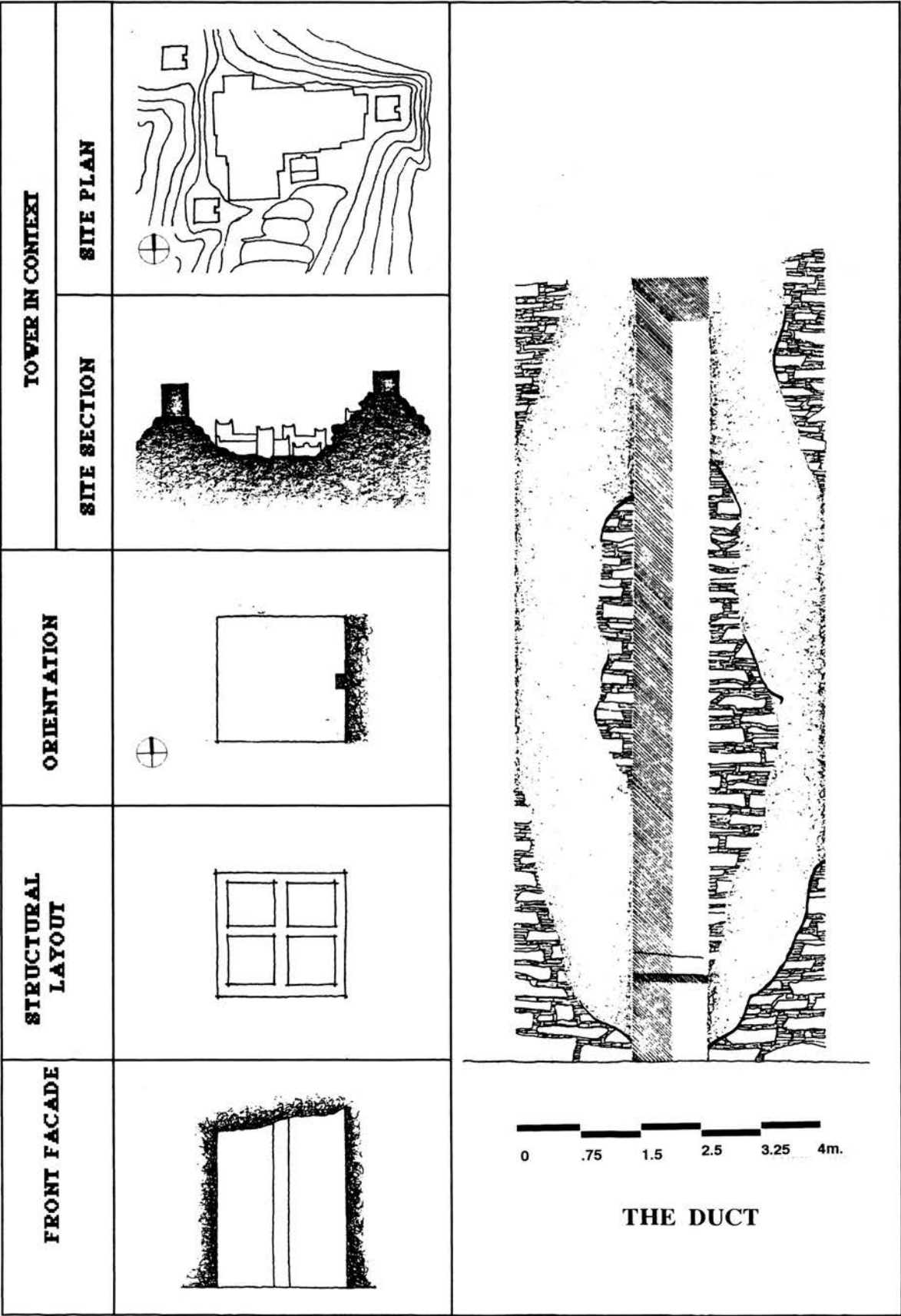


Figure 5.3.

A typical grain tower of al-‘Auṣā’ village with its duct.

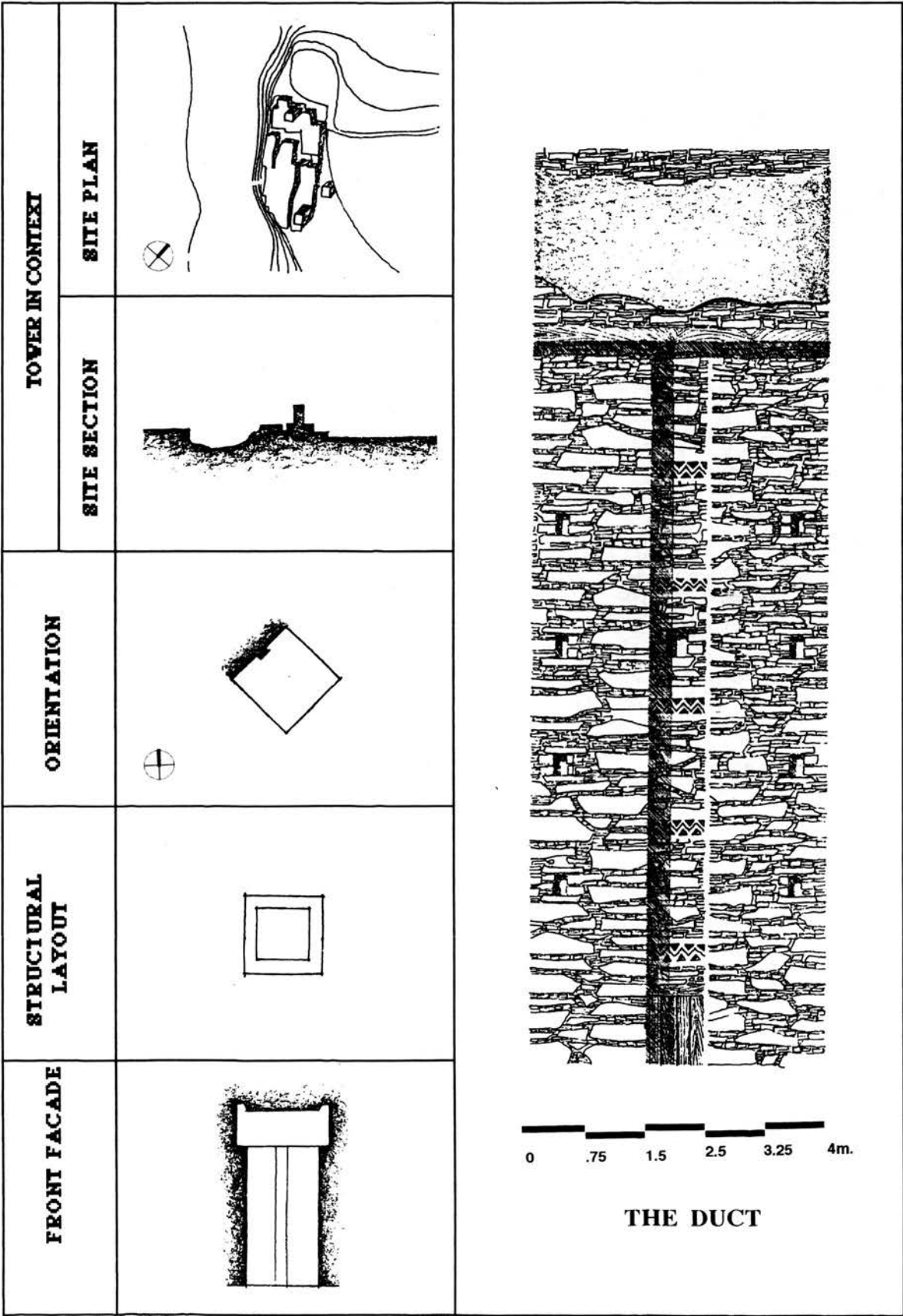


Figure 5.4.
 The defensive tower of al-Makhad village in context with its duct

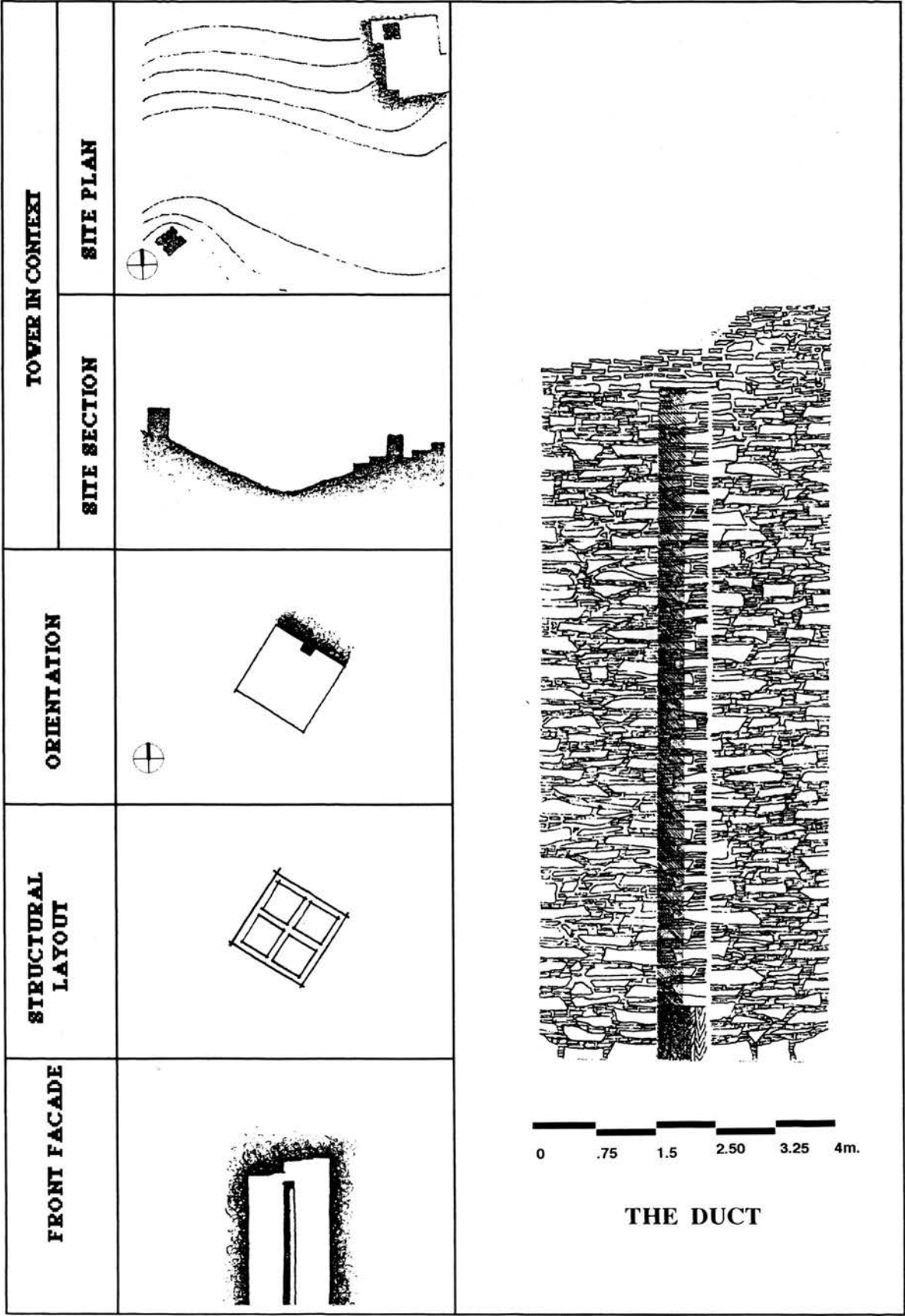


Figure 5.5.
The defensive tower of Āl‘Ishān village in context with its duct.

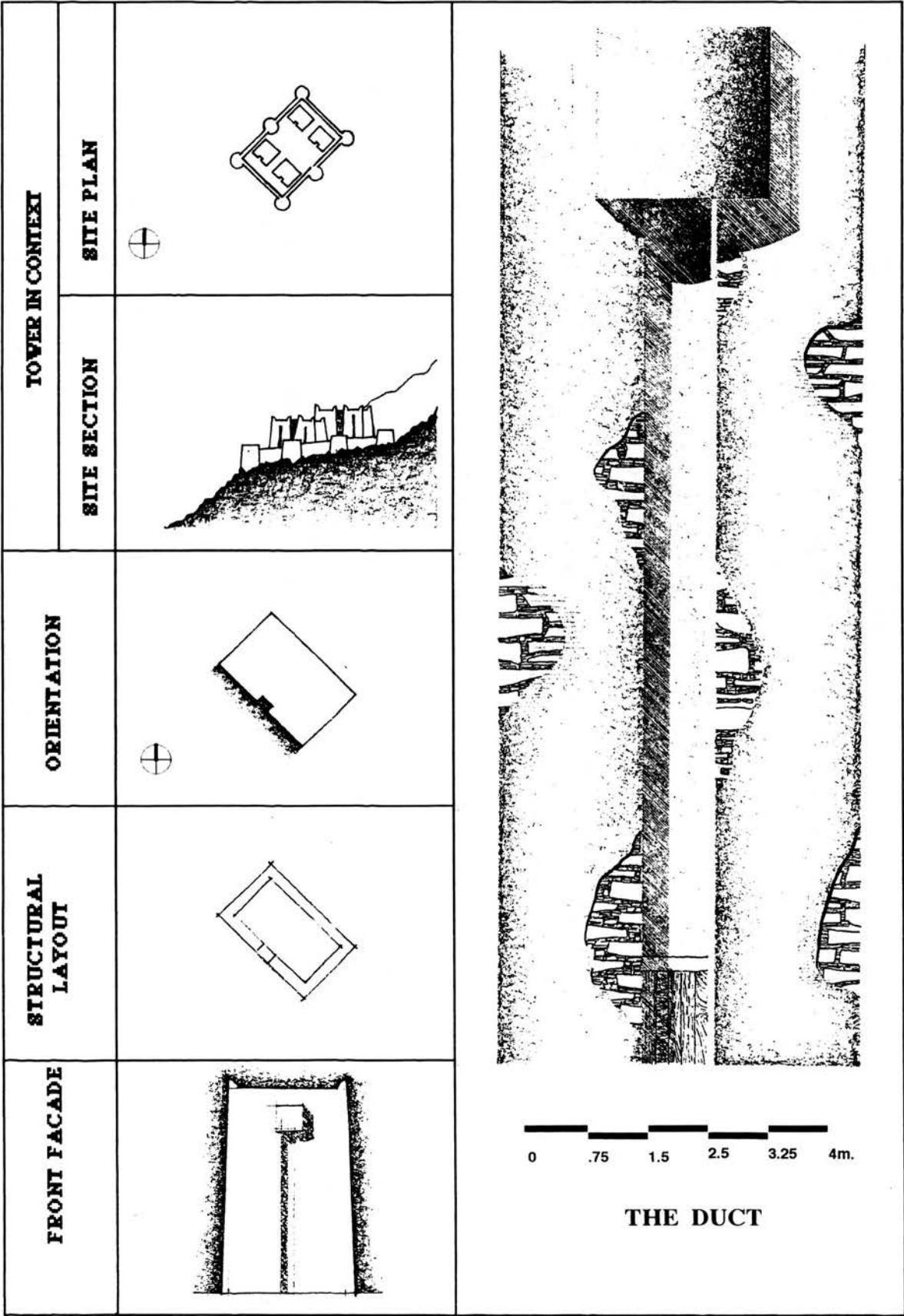


Figure 5.6.

A typical defensive tower of Raida fortress in context with its duct.

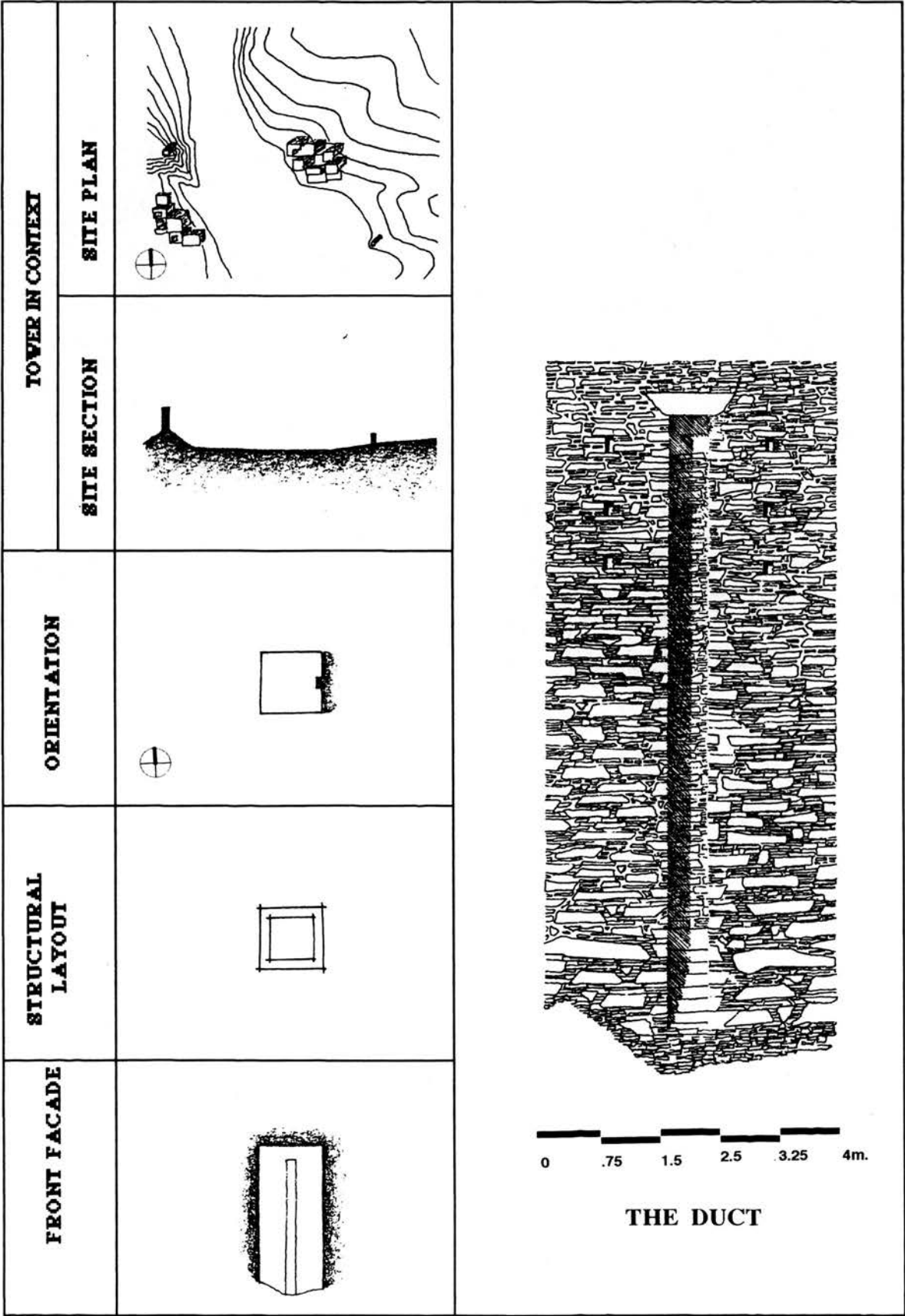


Figure 5.7.
The duct watch tower of al-⁶Ain village in context with its duct.

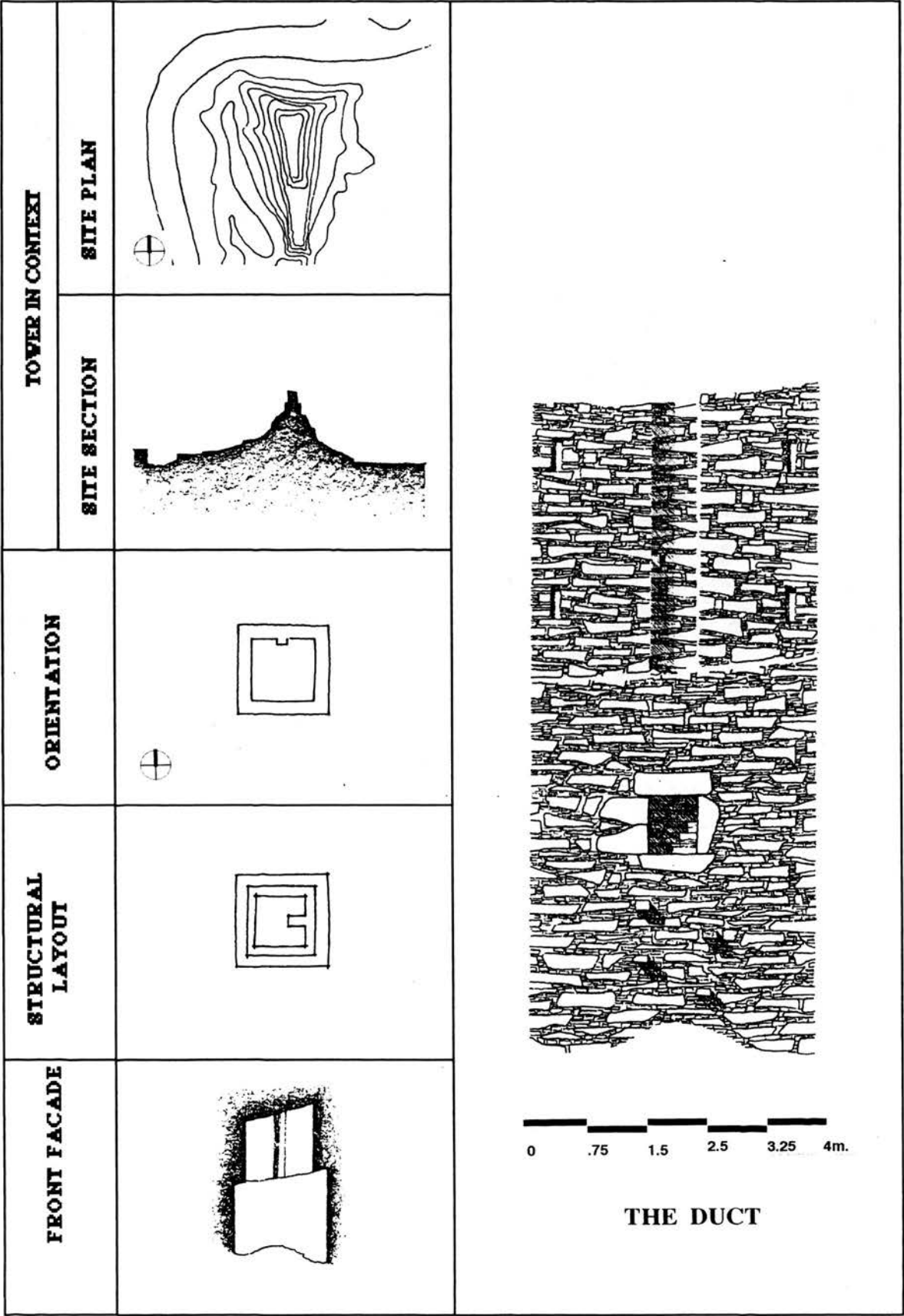


Figure 5.8.
The watch tower of al-Malāḥa village in context, with its duct

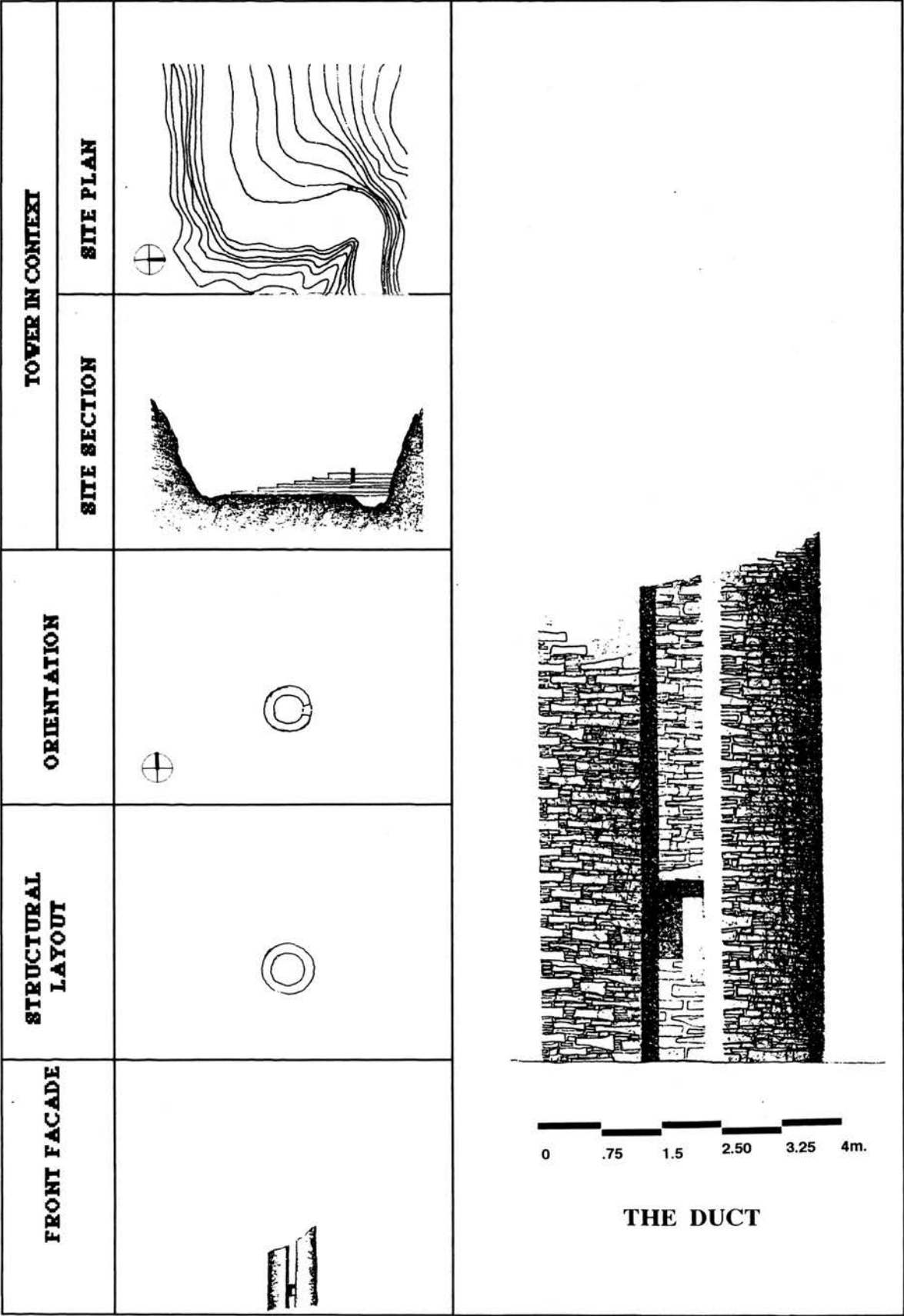


Figure 5.9.
The round watch tower of Wādī⁶Ushrān in context with its duct.

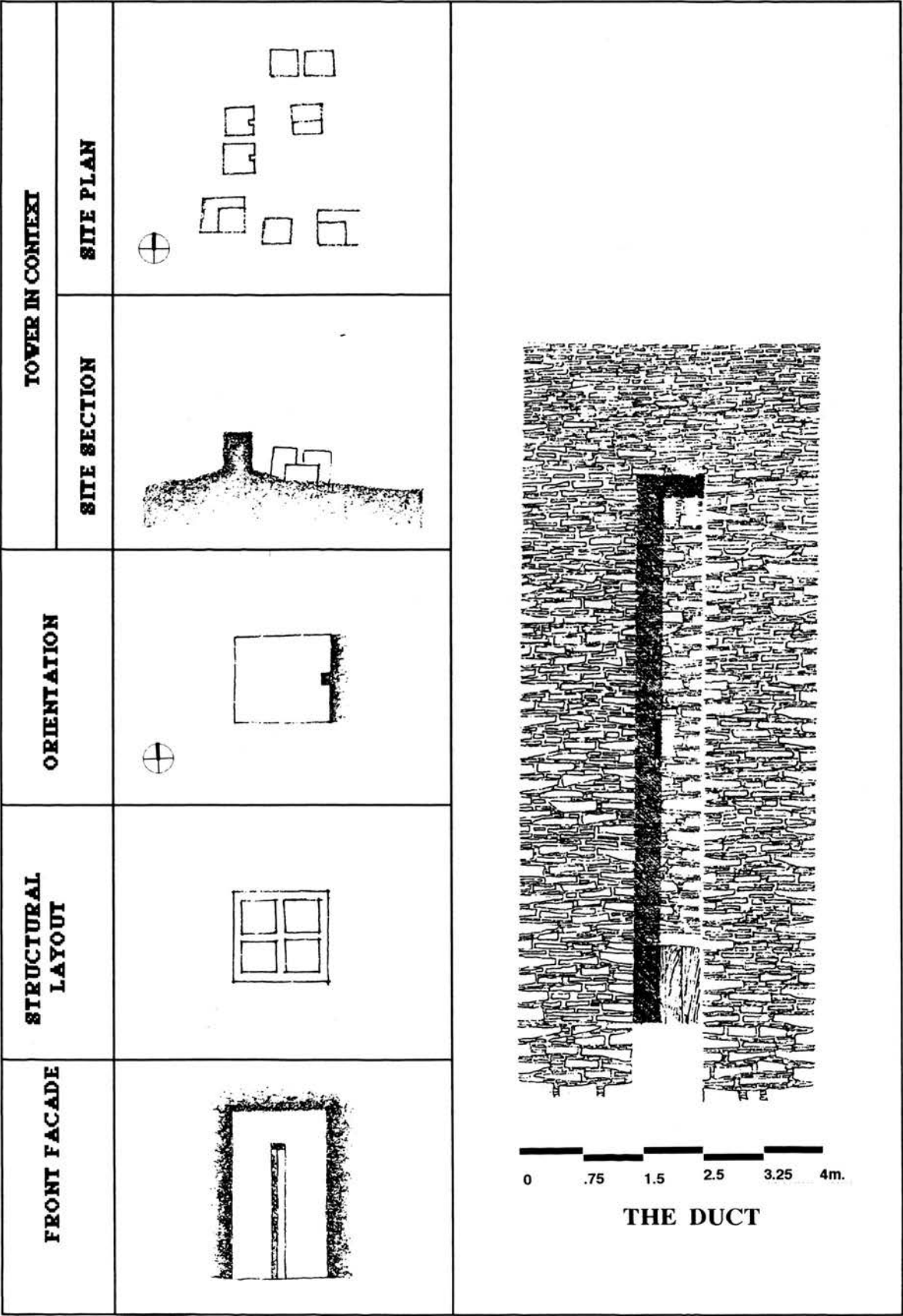


Figure 5.10.
The residential tower of Mšannif in context, with its duct

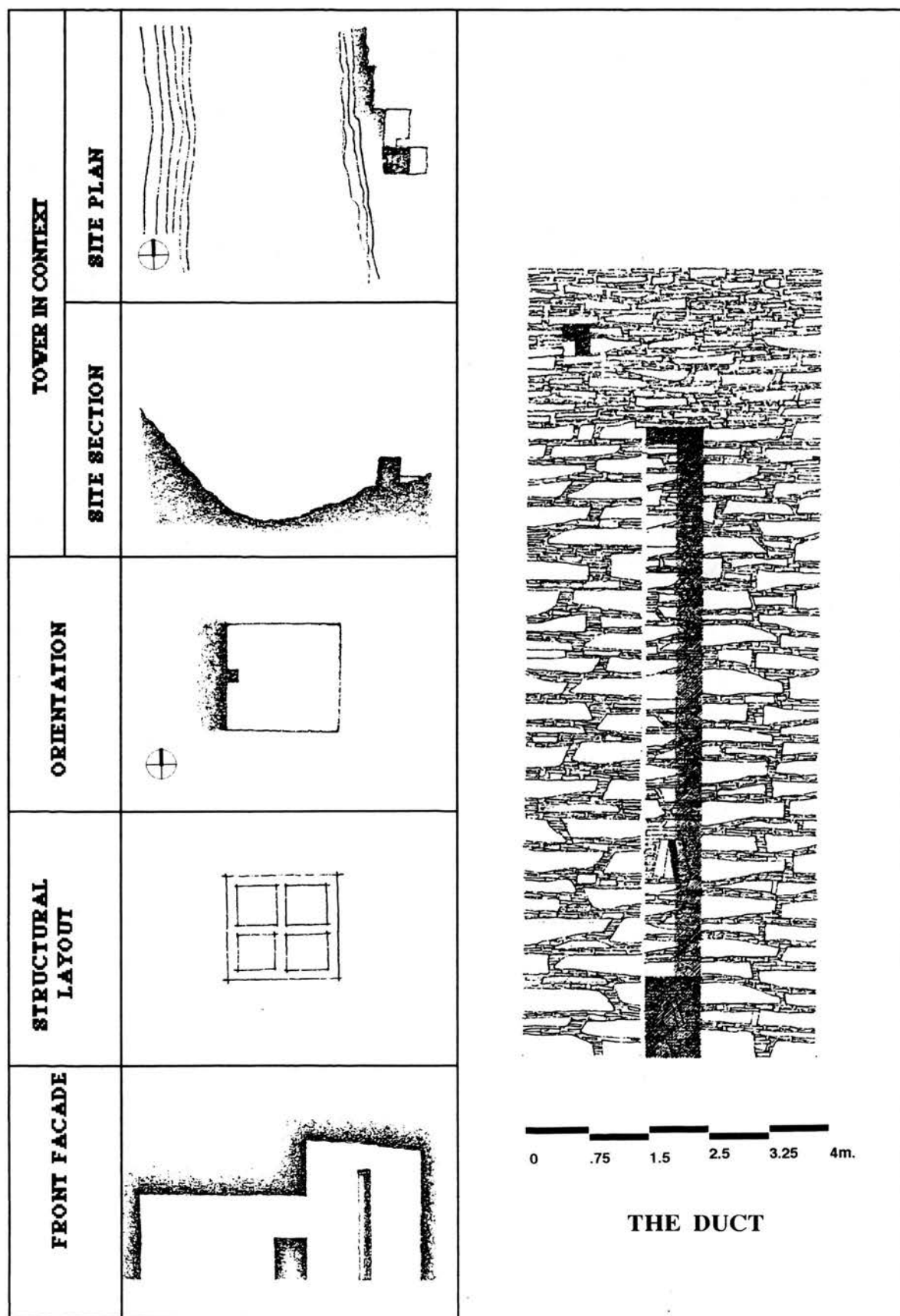


Figure 5.11.

The residential tower of al-Ukās village in context, with its duct

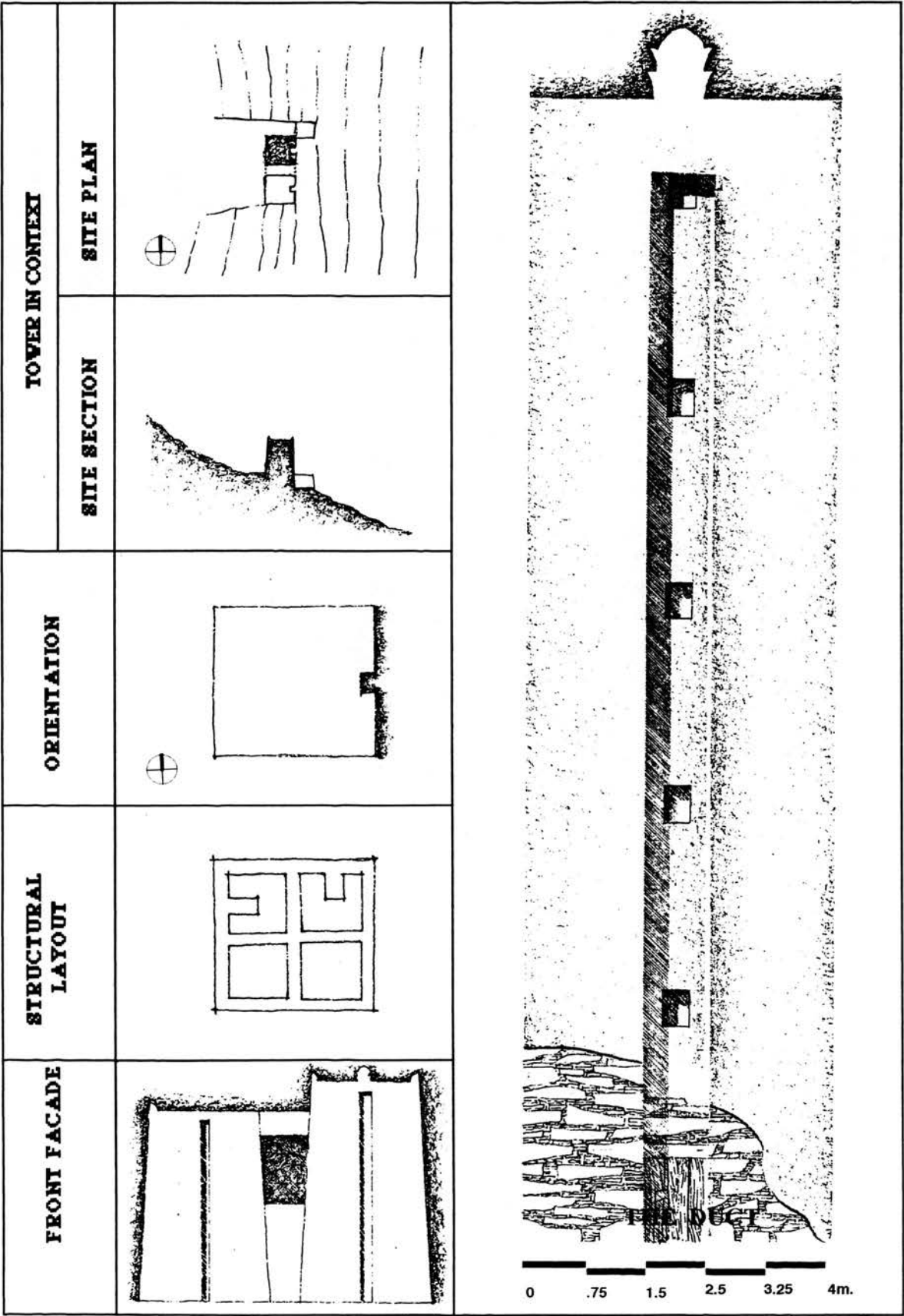


Figure 5.12.

The residential tower of ‘Azīz in context, with its duct.

Linguistic interpretation

The local term used for the duct is *naḥr*. The term did not appear in the list of the architectural terminology made by Prochaska (1977, 120). The term is used across the south and central sections of the highlands in territories occupied by different tribes of Rijāl al- Ḥajr, and ʿAsīr. The word means the front part of the chest, the neck, or it could mean the throat.

In this context the term is used as a metaphor where the duct is located in the centre of the main facade of the tower. It is as if the tower was perceived as a human body, where the duct is on the front of this body. But the metaphor could be carried further. One of the meanings of the word *naḥr* is the slaughtering of goats or camels by the neck (al-Bustānī, 1987,882). This image can be applied on the towers where carving the duct in the tower, is similar to slaughtering the animal at its throat. This metaphor will be carried further as we proceed with this chapter. But in general there is no direct relationship between the term *naḥr* and the duct. This metaphor is apparently fortuitous.

Defensive interpretation and the problem of generalisation

The most popular interpretation of the duct is as a runnel for objects (basically stone missiles) to be dropped by defenders taking refuge inside the tower while attackers are attempting to infiltrate into the tower.

This interpretation can easily be accepted in towers which serve only defensive purposes, like the cluster of towers in the fortress of Raida (figure 6) , where all the ducts end up with half-rounded projections over the entry door. The rounded niche is

hollow at the base, so that the defenders can drop their stone missiles over the entry door. This interpretation can also be applied to the grain tower of Fāḍil (figure 1) where the duct ends up in a large hole, used as a window to drop stone over the entry door.

In these towers the duct functions properly as a runnel for the missile which thus justifies the provision of the duct. But the ducts of other towers do not suggest such an interpretation. Not all ducts of towers across the highlands end with a niche or a large hole. The windows that interrupt some of these ducts are too small to allow people to use them as for dropping missiles platforms. Therefore, the ducts of these towers do not purpose function as runnels for weapons, and the purpose of the duct must be sought somewhere else.

The duct is applied indiscriminately in watch towers, whether in isolated locations or in the fields. It is also found in both small and large towers where the defensive purpose is minimal. The indiscriminate proliferation of ducts in towers of different purpose, different size, and of different contexts demands an explanation. The defensive interpretation alone can not explain this phenomenon.

Climatic interpretation and the problem of orientation

One of the most compelling interpretations refers the invention of ducts to climatic factors. But before I examine the effect of climatic factors on the ducts of these towers, a few facts must be kept in mind. Most of these towers have initially been built not for permanent human occupation, but either for temporary residency, for storing grain, or for watching. In most cases, the human occupation of these towers has always been a secondary factor.

The two climatic factors that must be taken into consideration in the design of these towers are rain and wind. Rain has a devastating effect on the exterior skin of the towers , therefore the orientation of the towers must avoid exposure to rain . Wind is also another destructive factor. The two factors work in collaboration to cause undesirable effects on the towers, since the rain drops fall diagonally, under the influence of the western and the south-western wind. In local dialect such diagonal rain drops are known as *al-sāfī*.

A quick look at the figures above suggests that there is no single orientation for all towers. The displaced grain tower of Fāḍil is oriented westward towards the fields, although this orientation is most undesirable, owing to the devastating effect of the rainfall. The two grain towers of Zahrā village are oriented eastward towards the fields. The three grain towers flanking al-‘Auṣā’ village are oriented eastward. As I have been informed by the residents of the village, this orientation was a response to the nomad tribesmen of Shahrān, whose sporadic and fast raids inflicted losses in grain and livestock.

These grain towers follow a different orientation. As far as the climate is concerned, there is no single favourite orientation . The orientation of each tower is influenced by its location in respect to the village and the fields .Therefore, climatic consideration were totally neglected in the orientation of these towers.

The two defensive towers of al-Makhaḍ village are oriented toward the village, where the southern tower is oriented northward, and where the northern tower was oriented southward. The duct of both towers avoided exposure towards the west and the south-west. Although this orientation complies with the local climatic conditions by avoiding the west and the south-west, the orientation of both towers is generated by the defensive requirements of the village.

The defensive towers of Raida fortress are oriented to face the west and the south-west which are the most vulnerable sides to attack. But so far as climatic factors are concerned this is the most undesirable orientation. The defensive and grain tower of Āl ʿIshshān is oriented to face and defend the village and its property to the north-east. Therefore, the orientation of the duct of these defensive towers is purely chosen for defensive reasons.

Watch towers are built outside their villages. Each of these towers corresponds to its village and fields. The watch tower of al-ʿAin village is oriented eastward towards the fields, while the watch tower of al-Malāḥa is oriented northward towards the village. The watch tower of Wādī ʿUshrān is oriented eastward towards the water channel. This is an indication that climatic conditions are disregarded in designing watch towers.

Symbolic interpretation and the problem of anonymity

Unlike compact houses, where every individual house is concealed within the continuous facade of the village, grain, watch, and defensive towers are notably vertical objects. They stand out, and this is especially true of the duct itself. It is possible, therefore, that the duct has been invented as a symbolic device, and has been used to mark these towers; or that the duct has been applied to the tower as a sign of its importance.

But the overwhelming popularity of the duct, in functionally different towers, in large and small towers, across the central and south sections of the highlands, and in territories held by different tribes and sub-tribes contradicts this assumption. The spread of the duct makes all towers look similar, which denies them the individual

recognition they might originally have sought by inventing the duct. Duct towers in effect become anonymous and this perhaps lessens the likelihood that they have symbolic intentions.

Furthermore, symbolic intentions are carried out through signs that can be understood universally. For example, the crescent is globally accepted as a symbol of the Muslim communities, and is found on the flags of a number of Muslim countries such as Turkey and Tunisia. The crescent is easily recognised and interpreted, and is loaded with symbolic meanings. But the duct lacks these features. It is a cavity, and as such does not lend itself to being used as a symbol. It is noticeable that local people know of no tradition that gives the duct a symbolic importance. On the other hand, the fact that the local name for duct refers to the neck might support that there is some built-in symbolism here, and that it relates to the human form.

Visual interpretation and the problem of human capabilities

The visual effect that results from using the duct suggests that the duct is visually motivated, as an element to enhance the visual character of these towers. The effects of symmetry and balance, the visual emphasis on the centre of the main facade, are effective techniques of securing attention visually and they support such an assumption.

But this assumption can easily be refuted. Stone structures are costly in terms of effort, time, and the resources that are put into them. The introduction of purely visual elements, for plastic effects, along the full height of the towers, is a monumental task that could not be afforded by these villagers and their primitive tools. The bulky size of the duct makes it too costly to justify its purpose as a tool of beautification.

The people of the highlands have invented more simple and more effective techniques of embellishment. They invented the punctuation technique (see Chapter Three) which requires the least amount of effort and time. The stark simplicity of the technique, the variety of patterns employed, and the minimal effort it demanded were all factors which encouraged its use to decorate the facades of these towers. Therefore the duct is not visually motivated despite all the suggestions that have been raised.

Social interpretation and the problem of equality

We have seen in Chapter Three that the architecture of the region is not based on hierarchical distinctions among the people. Had the duct been a reflection of social status, of wealth and prestige, it would have been provided for very few towers. The indiscriminate proliferation of duct towers across the central and south sections of the highlands, casts doubts on the idea that the duct was built as a socially motivated device. The duct is applied on numerous towers that differ in purpose, size, and in their physical context. The disregard of purpose, size, and context makes it difficult to believe that the duct is built to reflect social status.

The social order of the people across the highlands, as we have seen in chapter one, influences the invention of the duct indirectly. Building traditions in the central and south sections of the highlands do not feature techniques that are dependent on wood which is abundant in the landscape. The social norms are responsible for this situation. Craftsmen are downgraded in social rank vis-a-vis farmers, therefore wood craftsmanship was not fully utilised in architecture. This has resulted in a full reliance on stone bearing walls as the major construction technique.

In the social context of the inferiority of wood craftsmanship, the duct was, it seems, invented to perform the duties which, in other societies, were normally handled by wood beams. The duct, which is a product of techniques developed for stone

bearing walls, indicates the reliance on stone as the major building material in the central and south sections of the highlands. Only in that context can we interpret the duct in social terms.

Tribal interpretation and the problem of alliance

Duct towers are to be found spread over a wide area of the highlands covering a large number of villages and territories occupied by a large number of different tribes and sub-tribes. Duct towers cover more areas of the highlands than any other tower type. Had the duct been invented to mark some of these clans from each other, it is difficult to believe that the same emblem, the duct, would represent such a large number of clans, who retain different alliances, and have always engaged in warfare.

Utilitarian interpretation and the absence of the duct inside the towers

It is possible to think that the duct was invented for utilitarian purposes. But this leads us to question these purposes. The use of the duct which first comes to mind is that of a lavatory, which has been discussed, and dismissed at the beginning of this chapter. The utilitarian or functional purpose of the duct disappears when we examine the inside-outside relationship of the duct and the tower itself. The cavity of the duct which is visually experienced by the visitor before entering the tower, disappears once one gets inside. The visitor inside the tower finds no trace or any other suggestion of the duct to indicate that it serves any utilitarian purpose. But it does exist on a hidden level, probably the structural level.

The primary structural interpretation and its implications

The compactness of the houses in villages across the highlands, has led to houses of small rooms, with a structurally compact system, where each house is

supported by the next house. But duct grain, watch, and defensive towers are often built outside the villages. Therefore they lack the structural stability which compact houses enjoy within the village. The duct, then, could be a structural device used to provide stability for the tower.

By definition, towers are tall buildings. The vertical dimension of the tower is always larger than its horizontal dimension. Therefore the stability of these tall buildings is of great importance. In the highlands this has been ensured by building thick walls along the parameters of the tower supported in the centres by walls inside the towers.

The association of the duct to the main facade, and the entrance in particular, gives us a clue to the purpose of the duct. Carving a hole in load-bearing walls, especially at the bottom causes damage that potentially can cause the collapse of the tower. In these towers, the entrance is made through the centre of the front wall. But this causes a structural weakness, because the entrance point is placed at the intersection point between the exterior wall and the supporting wall inside the tower. Therefore, this conflict between the need for a door, and the structural need to support the wall at the centre, must be solved.

As illustrated in figure 4.13, this has been done by totally removing the wall above the entrance (*jidār al-naḥr*) for a limited depth so that the wall above the entrance is no longer part of the load of the tower. The lintel over the entrance door would have carried a larger portion of the load, had not the duct been provided.

Introducing the duct (figure 14) in the middle of the front wall of these towers relieves the lintels over the entry hole from carrying an enormous load. The duct diverts the loads away from the centre of the wall, thus protecting the entrance door and preventing the collapse of the tower under its loads. This is the local explanation for this feature.

The survival of the main facades of collapsing duct towers

On the basis of the structural role played by the duct we can explain one feature that distinguishes duct towers from other stone towers across the highlands. Duct towers across the highlands which are in various stages of collapse preserve the front facades (where the ducts are located) intact. This is in contrast to the sides of these towers, which have collapsed. In these main facades the duct provides stability by reducing the loads on the entry hole and by providing stability for the front walls of these towers. This structural advantage is lacking in the other sides of these towers.

Elevating entry points of watch towers

In this context, we can explain elevating the entry point in watch towers. Although this is done to discourage intruders from invading these towers, it also suggests

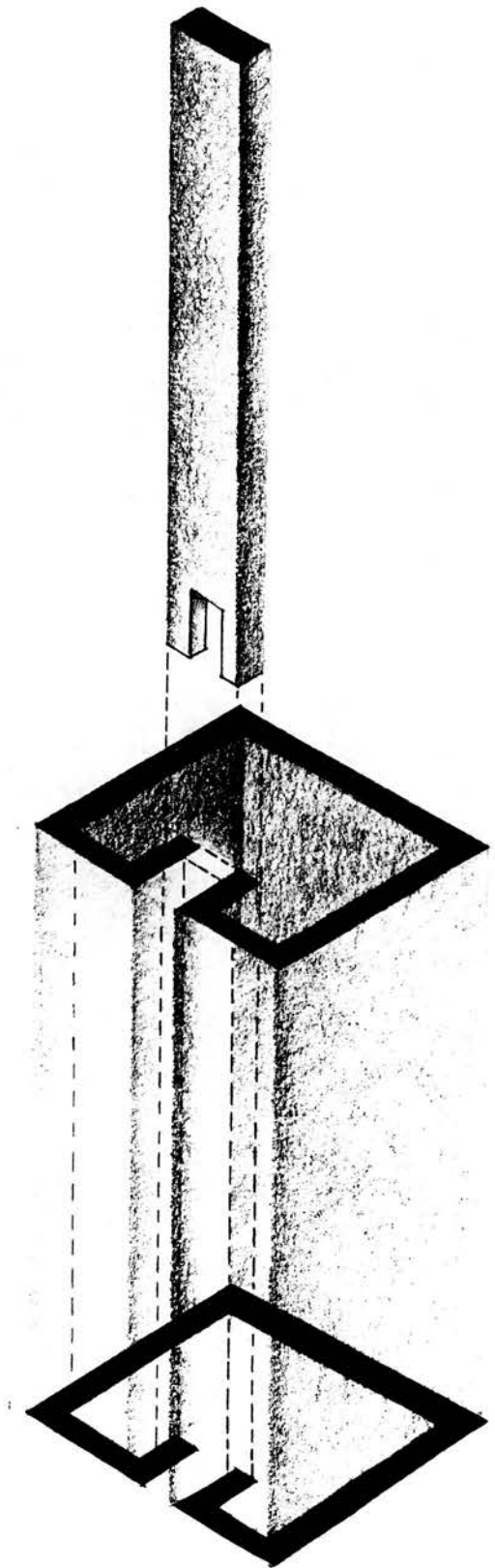


Figure 5.13. The duct wall. 204

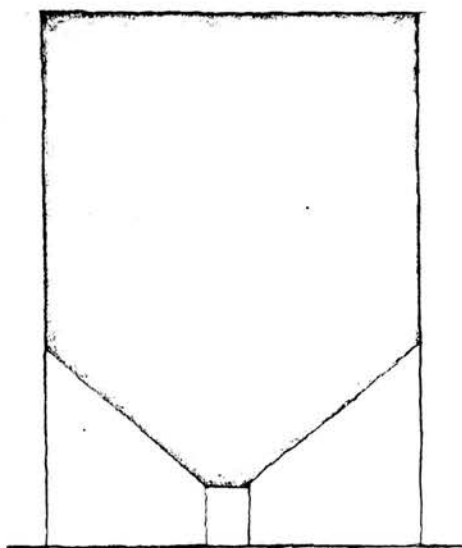
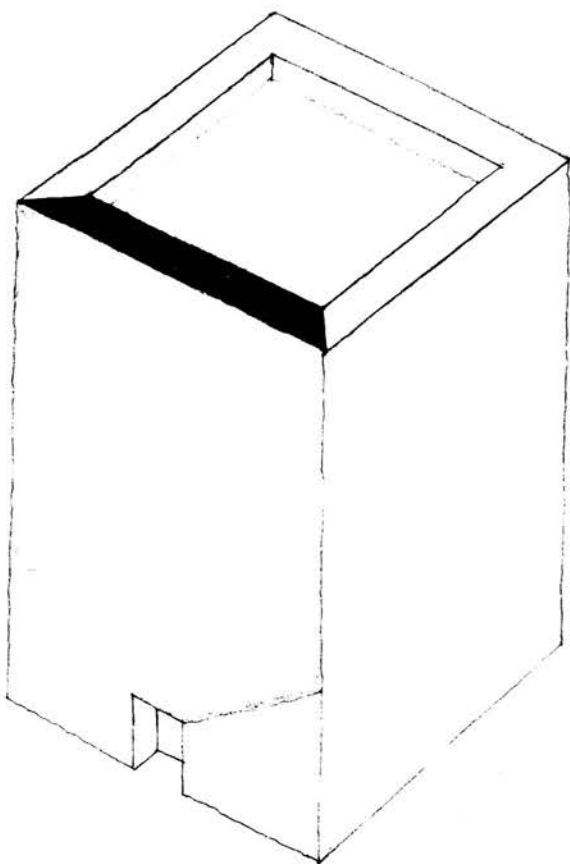
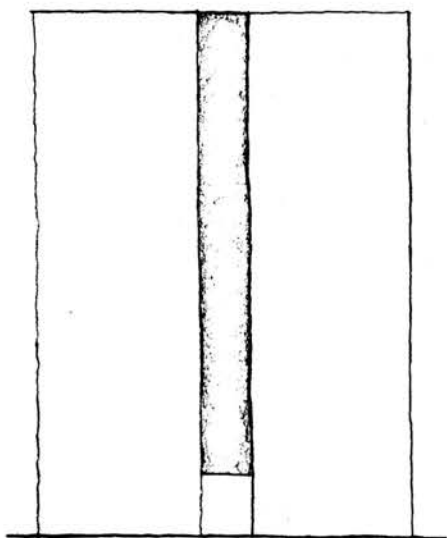
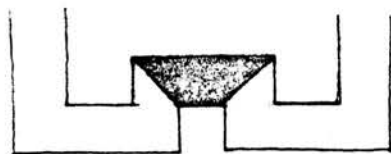
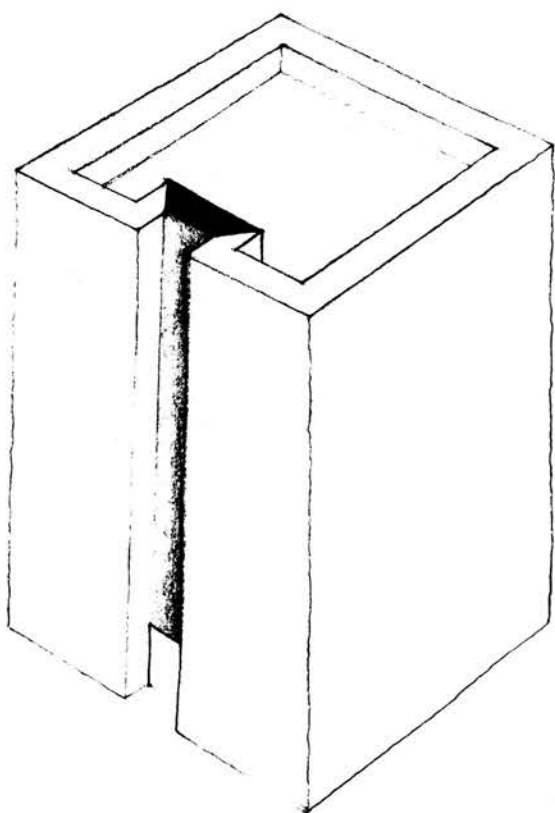


Figure 5.14.

Introducing the duct in the main facade (top) relieves the lintel over the entry hole from carrying enormous loads (bottom).

structural purposes. In al-Malāḥa tower (figure 8) for example, the entry hole has been raised a considerable height to reduce the load it carries. Had the entry point been lower down , it would have carried larger loads, and would therefore have jeopardised the stability of the tower. The defensive interpretation, which connects the elevation of the entry point to defensive measures, is a by-product of the structural need.

The relationship between the duct to plan shape of some towers

In the light of the structural interpretation we can justify the rectangular plan shape of al-Makhaḍ defensive tower (figure 15). The plan of the tower measures 460 by 420 cm. The extra forty centimetres thickness has been added to the square plan at the front wall, to make it possible to carve a duct in this wall. Had not this addition been made, it would have been difficult to carve a

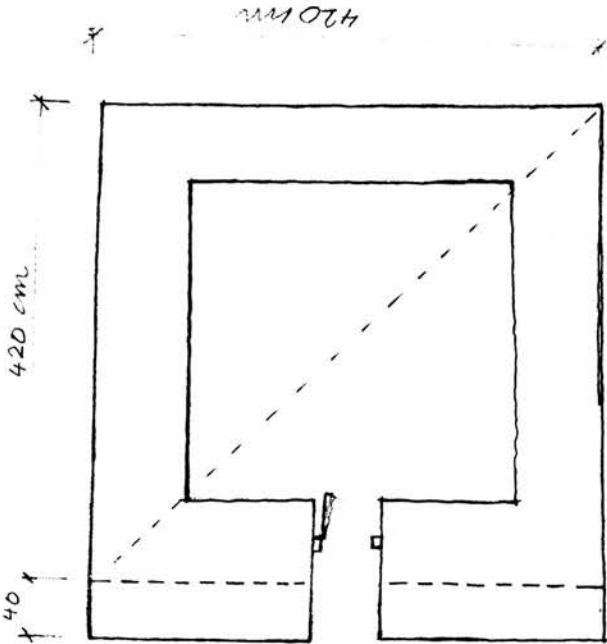
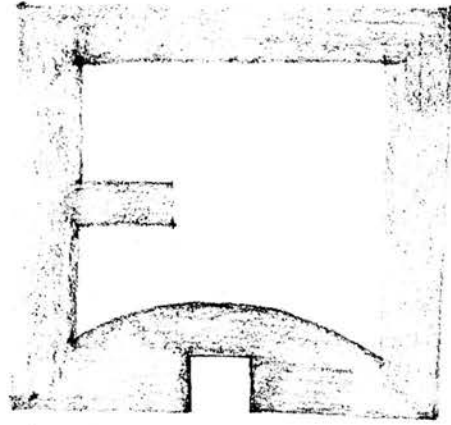


Figure 5.15.
The rectangular shape of al-Makhaḍ village defensive tower.

duct into the wall and the entrance door would have been loose and subject to breaking. For the same reason, the front wall of al-Malāḥa watch tower (figure 16) has been made thicker in a curvilinear form.

Figure 5.16.

The plan shape of al-Malāḥa watch tower



The isolated duct tower of al-'Ukās
village

The structural interpretation explains the existence of the duct in the displaced residential towers where the defensive purpose is very limited, as we can see in the residential tower in the village of al-'Ukās. This village (figure 17) is built of plain compact towers, on a structural module. The unit of the module measures from three to four meters. This unit and its subdivisions is repeated in every tower. This has produced a structurally compact village.



Figure 5.17.

The structural layout of al-'Ukās village and its duct tower, (top) plan,(bottom) elevation.

But the isolated duct tower in the southern tip of the village is deprived of the structural stability which the compact towers of the village enjoy. Therefore the tower has been provided with a duct. If the structural module is applied to the duct tower, the module lines would overlap with the duct at the centre of the tower, and both halves of the tower would also overlap with the unit of the module that underlines the structural layout of the compact towers.

The duct as a support in horizontal direction

The duct provides stability in the horizontal direction too. Vertical loads, with bearing walls structures, need support to prevent the movement of the walls in a horizontal direction. The "pier" wall (*jidār al-naḥr*) which lies behind the duct cavity prevents the horizontal movement of the two walls. Alternately recessing and projecting the walls slightly to provide support in the horizontal direction, is a common feature of the compact towers of al-Ukās village, where the exterior walls of the towers are alternately project and are recessed to provide the stability for the village as a whole.

This technique is found in many duct towers across the highlands, especially in the central section of the highlands. The walls of the towers are sliced outward to provide corners that reduce the span of the wall by half and prevent the wall from movement in a horizontal direction. Each corner of these is called *ḥadda*.

The typology of towers across the uplands

As illustrated in chart 1 we can, according to the structural assumption, explain the stylistic differences of towers across the uplands as a whole. As we have seen in

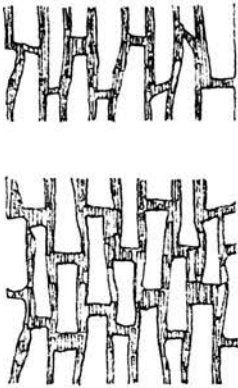
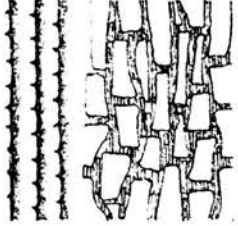
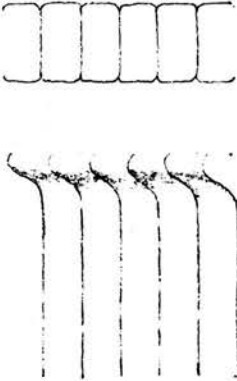


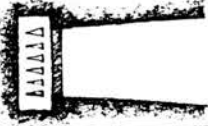
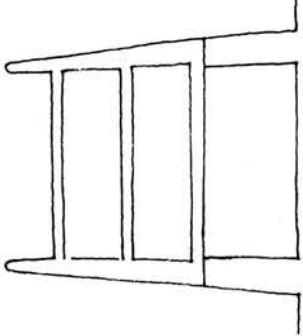
TOWERS						
BEARING WALL SYSTEM						
FORM	ZONE A			ZONE B		ZONE C
STRUCTURAL SYSTEM						
REFERENCE						
TECHNIQUE						
SECTION	CENTRE & SOUTH NORTH		ALL SECTIONS		ALL SECTIONS	
METHOD						

Chart 5.1.

The structural interpretation and the typology of towers across the highlands. 209

Chapter Two, there are three types of towers in the region: stone towers built in zone A, composite towers built in zone B, and mud towers built in zone C. Within zone A there are three types of towers; the parapet tower, the platform tower and the duct tower. Both the latter types are built in the central and the southern section of the highlands. The parapet tower is to be found in the north section of the highlands.

In zone C the tower is built from mud courses. Each single course circumscribes the tower. But because of the unreliability of mud to collapse, the tower is built with tapering walls so that the exterior walls of the tower lean inward to provide stability for the tower. The same system of load-bearing walls is applied to towers in zone B, with one difference. Towers in zone B are provided with stone foundation walls that rise one clear floor above the ground level to support the mud courses built on the wall.

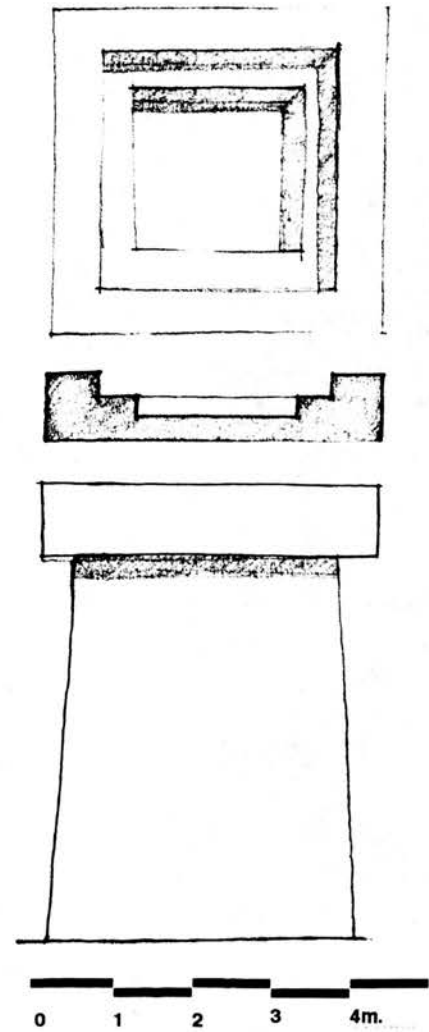
In zone A there are three structural methods used to support the tower. Some towers in the central and south sections of the highlands are provided with a massive stone platform to support the tower above. The watch tower of al-Malāḥa is of this type. In the central and south sections also, the duct is invented to reduce the weight over the entrance of the tower in the front wall. In the north sections of the highlands (Dostal, 1983, 97) towers similar to that in figure 18 are smaller than those of the south section, have no duct, and are provided with parapets.

But these features are linked together. The absence of the duct from towers of the north section of the highlands is responsible for the small size of these towers. Without the duct the people find it difficult to build large towers comparable to those in the central and south sections. Because these towers are small, the parapet has been invented to maximise the usable floor area of the flat roof and to enable the defenders of the tower to use the parapet as a protective wall punctuated with loopholes.

Figure 5.18.

A typical parapet tower of the north section, (top) roof plan , (centre) section through the roof floor , (bottom) elevation.

All towers in the uplands are built by using a system of bearing walls. But by using different building materials, different **techniques** are produced, which results in using different structural **methods**. This ultimately has led to a different typology. The tower as a form, and the bearing wall as a structural system, are universally accepted across the region. But the difference in the structural methods and techniques, used to support the towers is responsible for the variety of tower typology.



In recent times, before the widespread adoption of concrete buildings the isolated low-rise stone houses built outside compact villages became familiar. These houses are built with a single storey, therefore the duct has disappeared from them. This is an indication of the structural role that the duct had been playing in isolated tall buildings. Low-rise structures need little structural support; indeed the new low-rise stone houses are safe enough not to be provided with the duct.

The structural interpretation in the context of other interpretations

Within the structural interpretation, the interpretations that have been made earlier, are easier to accept. The linguistic metaphor of the duct and the slaughtering goats is easily recognised. It is as if the tower had been conceived as a structural giant menace that must be slaughtered. This is exactly what the duct has done ; it has reduced the structural menace of the tower which then became manageable and under control.

The visual interpretation is also recognised as a result of a structurally motivated device. As the duct runs across the vertical facade it attenuates the tower and ensures its verticality. In visual terms it creates a balance and symmetry. Under the effect of daylight the visual performance of the duct is greatly enhanced. The duct which always points down to the main doorway of the tower becomes, therefore, a visual device used to guide people toward the main door of the tower. And because these towers were built outside the physical fabric of their villages, the duct became an emblem of grain, defensive, watch and, in a few cases, residential towers.

The duct, viewed as a result of removing a small portion of the outer wall and scooping it out of the body of the tower, is a device that can be used defensively. This is where the repeatedly mentioned interpretation of using the duct to guard the tower can be understood. The duct became a suitable channel to drop weapons that travel down to the ground. The defensive interpretation is therefore a by-product of the structural purpose of the duct.

Platform towers and duct towers are structurally related. The platform and the duct are structural inventions used to overcome the difficulty of carrying the loads of the towers, and to make towers as high as possible. Judging by the performance of the two devices, the platform and the duct, I believe that platform towers are older than duct towers because the platform is easier to build than the duct. Therefore they must have been built first.

Platform towers recess inside as they go up, thereby decreasing the available space that can be used inside the towers. As a result, platform towers became impractical to function from the inside because of the shortage of space. As time passed, people invented the duct and overcame the problem of the impracticality of platform towers. The duct has come to be adopted after platform towers proved to be impractical for people because of the shortage of the inside spaces in these towers. The duct enabled people to have spacious rooms inside the towers and use them in addition for watch, retreat, and defensive purposes as well as for grain chambers.

This explains the relative rarity of platform towers across the highlands in contrast to the overwhelming proliferation of duct towers. This indicates that platform towers are remnants of an ancient tradition, from times when the platform tower was the major type. Their number has dwindled with the advancement of duct towers. The duct fulfilled structural needs, and at the same time provided spaces inside these towers that could be used.

The bases of platform towers that have been found across the highlands are not as wide as those of duct towers, which indicates that they were not heavily used on the inside. They were built in high locations as watch and retreat towers in contrast to

duct towers which are found on both high and low ground and are used as grain towers. Platform towers are limited to high locations so that they can be used to survey surrounding area . The arrival of the duct tower meant that platform towers were abandoned in favour of duct towers which have been built everywhere for different functions.

The replacement of platform towers with duct towers did not happen suddenly. It must have taken a long time to develop. This can be detected from the surviving towers which carry both devices, the platform and the duct , as we will see in Chapter Eight.

The absence of vaulted structures from the highlands and the reasons for this feature

Vaulted structures are absent from the highlands of 'Asīr. There are many reasons for this. Vaulted structures enable people to build large and high spaces to accommodate large number of people. However, as the people of 'Asīr live in villages they do not need spacious buildings. The rooms in their houses are large enough to accommodate them. If large congregations of people are not easily to be accommodated in their reception rooms, the public compounds of their villages are used instead. Moreover, in an area where wood is scarce and the normal building material is stone, not brick, the necessary wooden centring would have been expensive to provide. For these various reasons, people did not find it necessary to invent a new building method to produce different types of building such as the vaulted structures. But other reasons could also be adduced.

Vaulted structures produce large spaces (Leick, 1988, 238). In climatic terms, particularly in the highlands of ‘Asīr this is inefficient. The large spaces that would be created by vaults would be too cold to heat. We have seen in Chapter Four that the people all across the highlands build small rooms, and ensure that these rooms are kept warm by heating them. Spacious vaulted rooms, then would deny people the warmth they enjoy in the small rooms created by the local building technology.

Local topography has also played its part and indeed has led to the absence of vaulted structures. Villages and towers across the highlands are built on the top of hills for defence and vaulted structures are not entirely appropriate for such rugged topography. Vaulted structures are also not appropriate for vertical expansion. It is hard to add extra stories at will in such structures. But the bearing wall technique is easily adaptable to rugged topography, and flat roof technology readily allows for vertical expansion. This alone justifies the proliferation of towers across the highlands and the absence of vaulted structures.

Vaulted spaces are, moreover, open. The people inside them are exposed to dangers. In the socially insecure environment of the highlands, larger spaces are more dangerous than smaller ones for the safety of the people, since they would more readily expose the inhabitants to attack by enemies. This is another reason why this method of construction was not used in ‘Asīr. the Bearing wall techniques, on the contrary, provide small, dark spaces which are ideal for hiding and retreat from enemies as we will see in Chapter Eight. Owing to their openness, then, vaulted structures violate the norms of privacy which is an essential social feature in the local environment.

The architecture of the highlands serves an agrarian society. Vaulted structures need significant numbers of people to construct them. But in ‘Asīr one builder and his assistant can build an entire tower. The simplicity of bearing wall techniques and the inferiority of craftsmen -which resulted in them not developing their skills in building vaulted structures- have eliminated the need to use such structures. In the highlands of ‘Asīr stone is available in abundance and stone is easily available in shapes that need very little dressing. The absence of the requisite labour force and the technology to invent vaulted structures is met by the exploitation of this excellent stone in bearing wall techniques.

It must also be stated that traditions die hard, especially in isolated regions such as the highlands of ‘Asīr. People do not invent new forms of technology unless there is a strong need to do so. The people across the highlands of ‘Asīr have found over the years that the bearing wall technique was efficient. The isolation of the region has kept this building tradition intact and prevented outside influence from changing it.

Conclusion

Vertical buildings like the stone towers of ‘Asīr need support in both vertical and the horizontal direction. The heavy usage of stone bearing walls across the highlands as the only structural system used to support the towers has led to the invention of the duct. The duct is therefore a stiffening device used to support the tower. The staircase is also used in a similar way. In view of the height of these towers, and the fact that ‘Asīr is an earthquake zone and that mud mortar is used (and courses must yield a little when vibration occurs), some form of stiffing is vital.

I conclude that the duct was invented for a structural purpose, which is to relieve the entry point from the heavy loads of the tower. The " pier " wall , known locally as *jidār al-naḥr* , through which the duct is carved provides support for the front wall of the tower in a horizontal direction. There is no evidence to explain the duct in social and ethnic terms. The association between the duct, which runs across the centre of the front wall ,and the entrance of the tower enhances the visual effect of the tower . This suggests a visual function for the duct. The widely accepted defensive interpretation, which states that the duct was invented as a channel for missiles, is also a by-product of the structural need behind the duct.

It is very interesting to trace the evolution of the duct , but the scarcity of the data vital for carrying out this task makes it difficult to pursue such goal. Instead we see in the coming chapter how the towers are used as granaries.

THE GRAIN DUCT TOWERS OF FĀḌIL, AL- 'AUṢĀ' AND Zahrā VILLAGES

Introduction

In this chapter a number of duct grain towers are investigated. Each tower represents a different physical context. The first tower of Fāḍil is an isolated tower. The second tower (s) is built inside the stone compact village of Zahrā . These towers are in the south section of the highlands. The third tower(s) is close the village of al-'Auṣā' in the central section of the highlands. The particular emphasis of this chapter is on the tower of Fāḍil ; to examine the initial and the subsequent purposes of the tower, and to analysis the changes that influenced the evolution of the tower. The other towers under discussion in this chapter are described in brief to see how they are similar to, or different from, the tower of Fāḍil.

The isolated tower of Fāḍil

The physical context

As illustrated in figure 1, the tower (A) is located in a depression defined by two opposite hills. Both of them slope towards each other, thus producing a natural linear space which ends as the two hills converge at the lower (north) and upper (south) ends of the depression. At the centre of the depression, along the base of the two hills, are the fields (B) which widen in the centre of the space and get narrower on both ends of the depression. Each field is defined by a stone wall, and slopes down

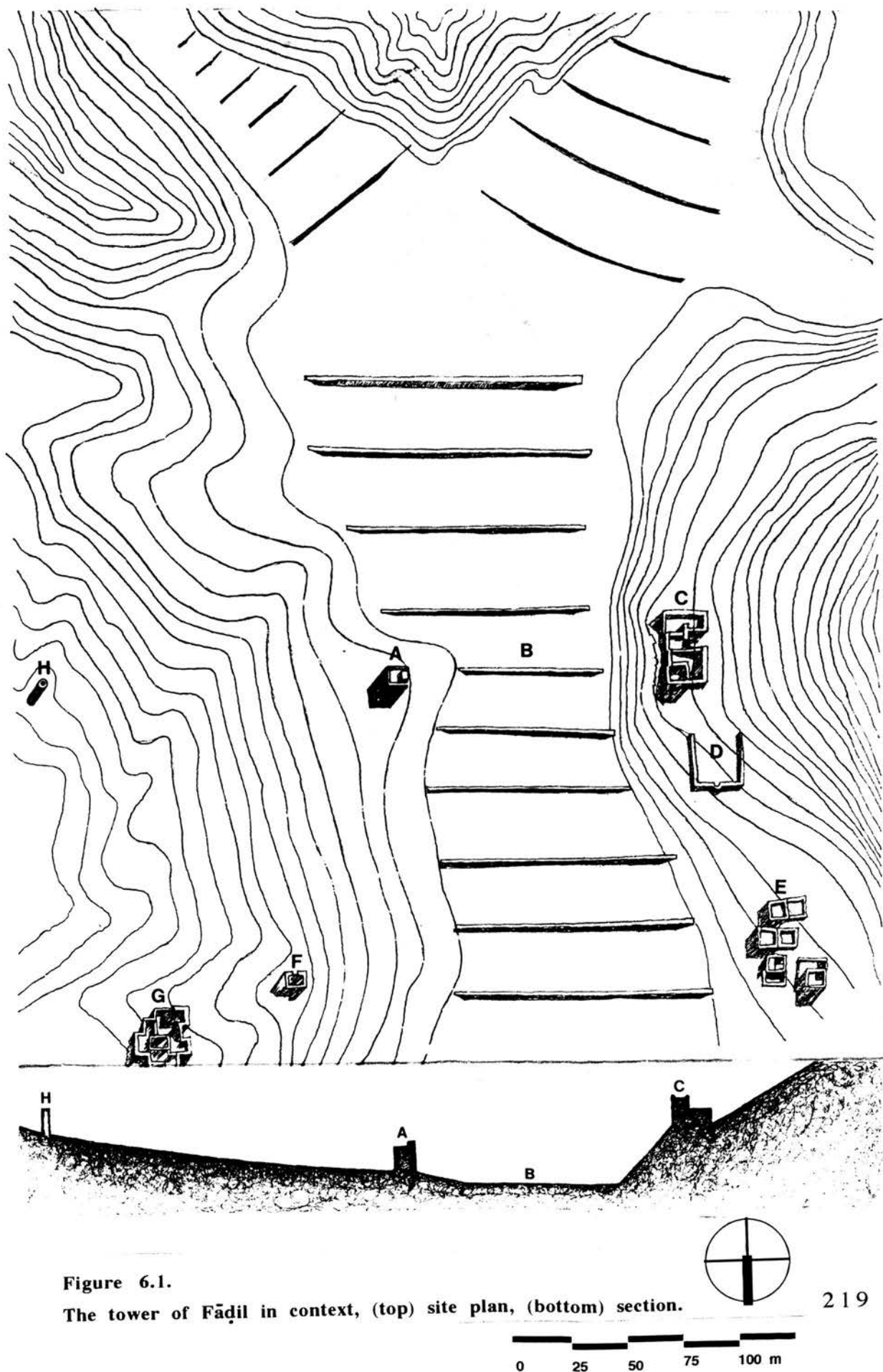


Figure 6.1.

The tower of Fādīl in context, (top) site plan, (bottom) section.

easily so that each field drains the rain-water down to the next field with little intervention from farmers being necessary.

Opposite the tower on the west side of the terraces , is a small stone compact village (C) which is now in ruins. There is also an empty yard (D) to the north-west of the tower. It is used as a weekly market ,and a prayer compound during the two annual Islamic feasts (*‘īd al-ḥijr* and *īd al-aḍḥa*) . To the north of the yard is a semi-compact village (E) built from stone and composite towers, some of which are still occupied. On the north-east side of the tower is a collapsed duct tower (F), and a collapsed stone village (G). And finally, there are two round stone watch towers (H) to the east of the tower. One of them is deteriorating , but the other is still in good condition .

Currently the tower stands isolated from other buildings except a room made of concrete , and a shed with a metallic roof used as a garage (figure 2). There are two houses beside the tower; both have been built recently. One of the houses is a composite tower and the other house is built of concrete. These two houses are not dealt with in this chapter as they have little relevance to it.

The external features of the tower

The peculiar feature of this tower is its size when compared to the towers of the neighbouring villages. From the outside the tower exhibits a massive stone structure, punctuated with holes of different sizes. The tower is oriented westwards as revealed by its duct. The tower is free of finials, paint, and parapets. The most significant visual aspect of the tower is the punctuation of the dark stone rubble with the white stones of quartz in triangular patterns around the holes. However this technique is typical of all towers in the southern section of the highlands.

Access to the tower is through the door at the lower end of the duct where it touches the ground. Above the door is a window at the centre of the duct. Decorative white stone bands interrupt the duct as it ascends. The duct terminates in a large window that opens from the inside into the stair shaft of the tower. The main facade is distinguished from the others by two main features: the duct, and the decorative stone motifs which come in triangular and chequerboard patterns. The other facades have no duct and their decoration is confined to triangular patterns.

Organisation

The tower features a square plan (figure 3) divided into three parts along the east-west axis by thick stone walls. The central part contains the lobby or hall (1) , the stair shaft (2) and a room (3) at the back. The two other parts (4) are kept clear with no subdivision, and are used as grain storage rooms. This organisation is repeated in all the floors except the fourth floor.

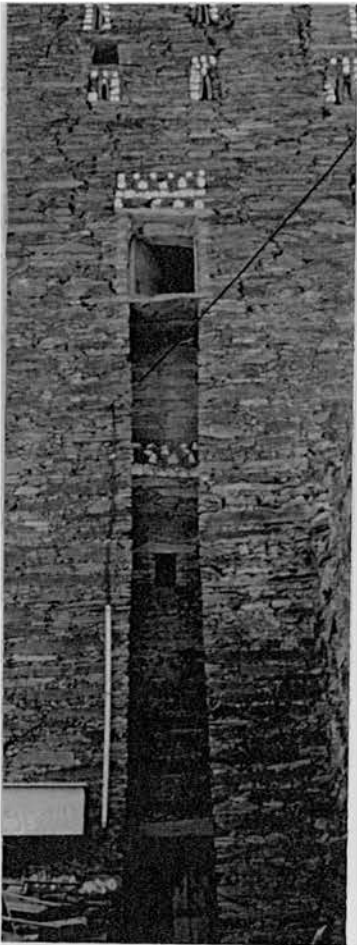
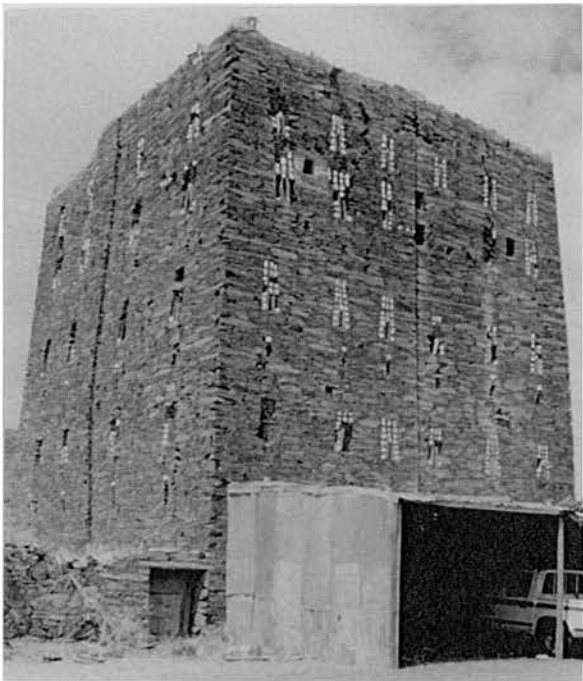
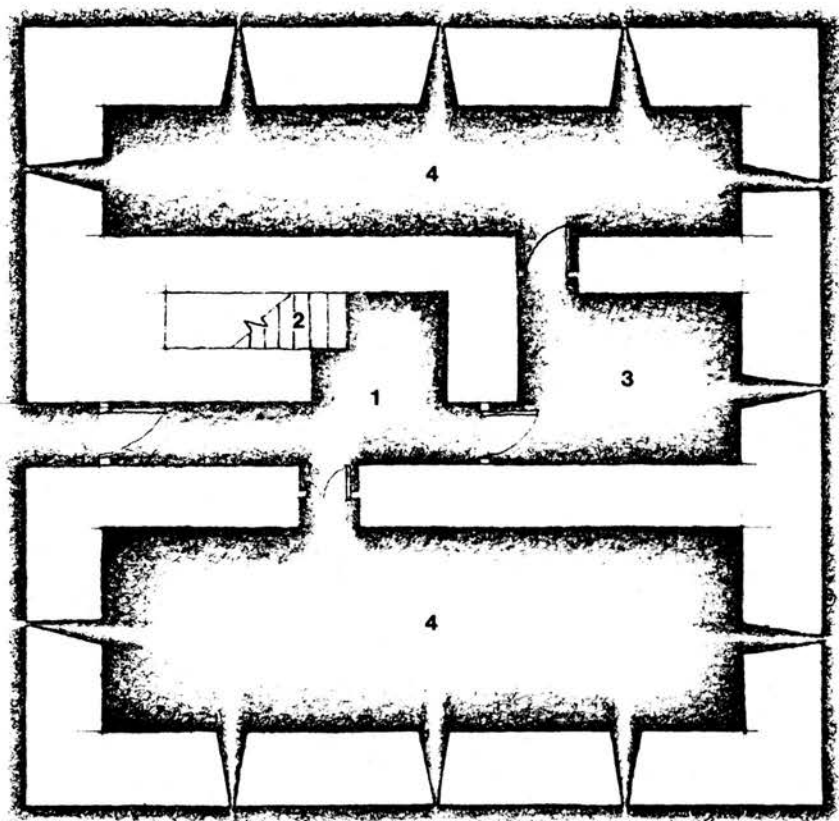


Figure 6.2. the tower from the south-east corner (top) ; the duct (bottom). 221



LEGENDS

- | | |
|---------------------|----------------------|
| 1 THE ENTRY HALL | 4 THE GRAIN CHAMBER |
| 2 THE STAIR SHAFT | 6 THE RECEPTION ROOM |
| 3 THE GRAIN CHAMBER | 5 THE KITCHEN |

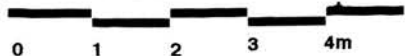
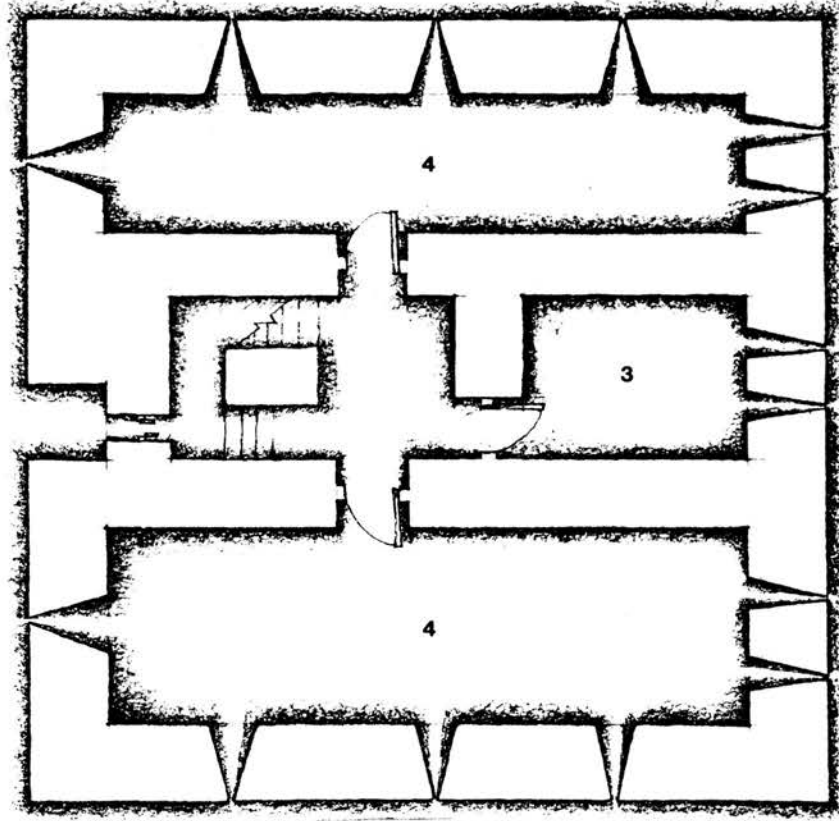


Figure 6.3. (top) The ground floor plan, (bottom) second floor plan.

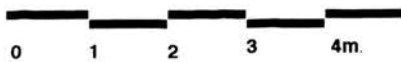
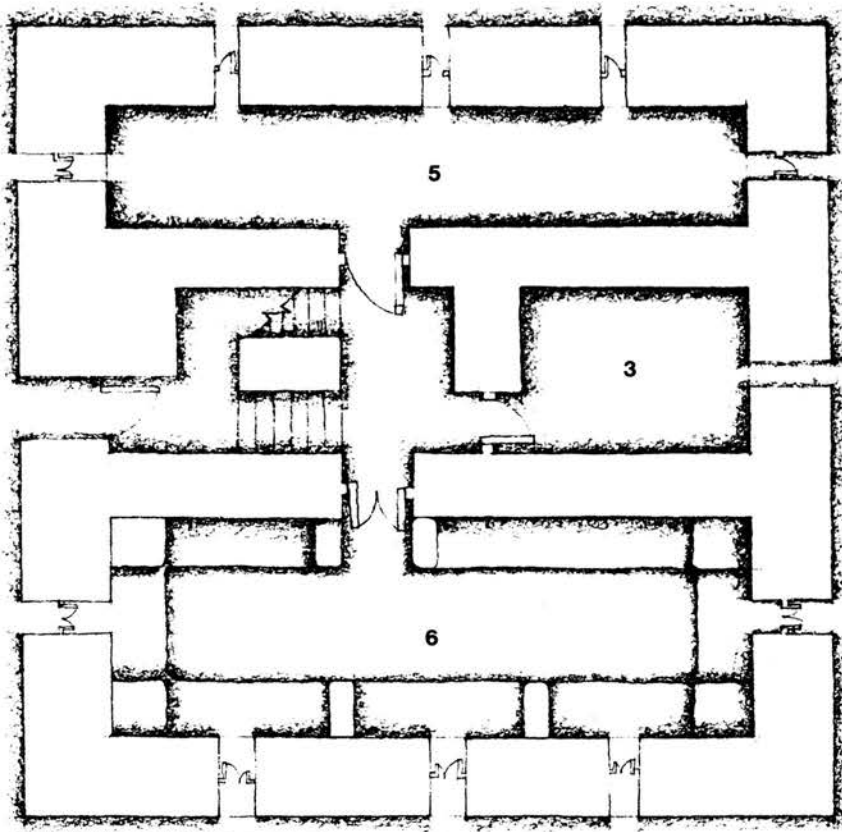
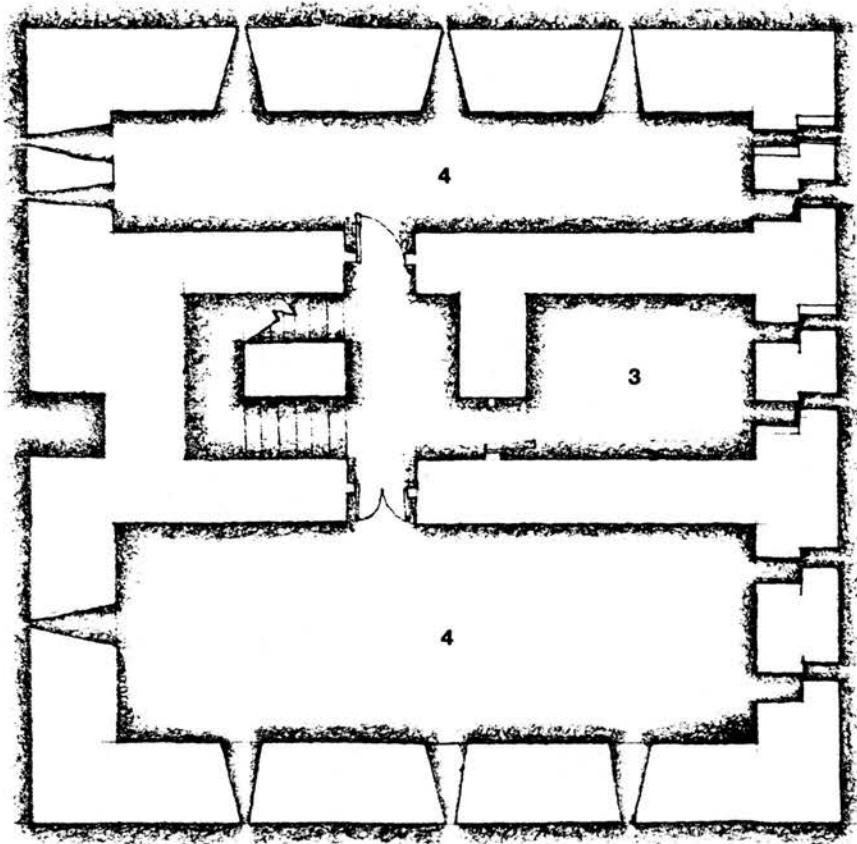


Figure 6.3.

(top) third floor plan, (bottom) fourth floor plan.

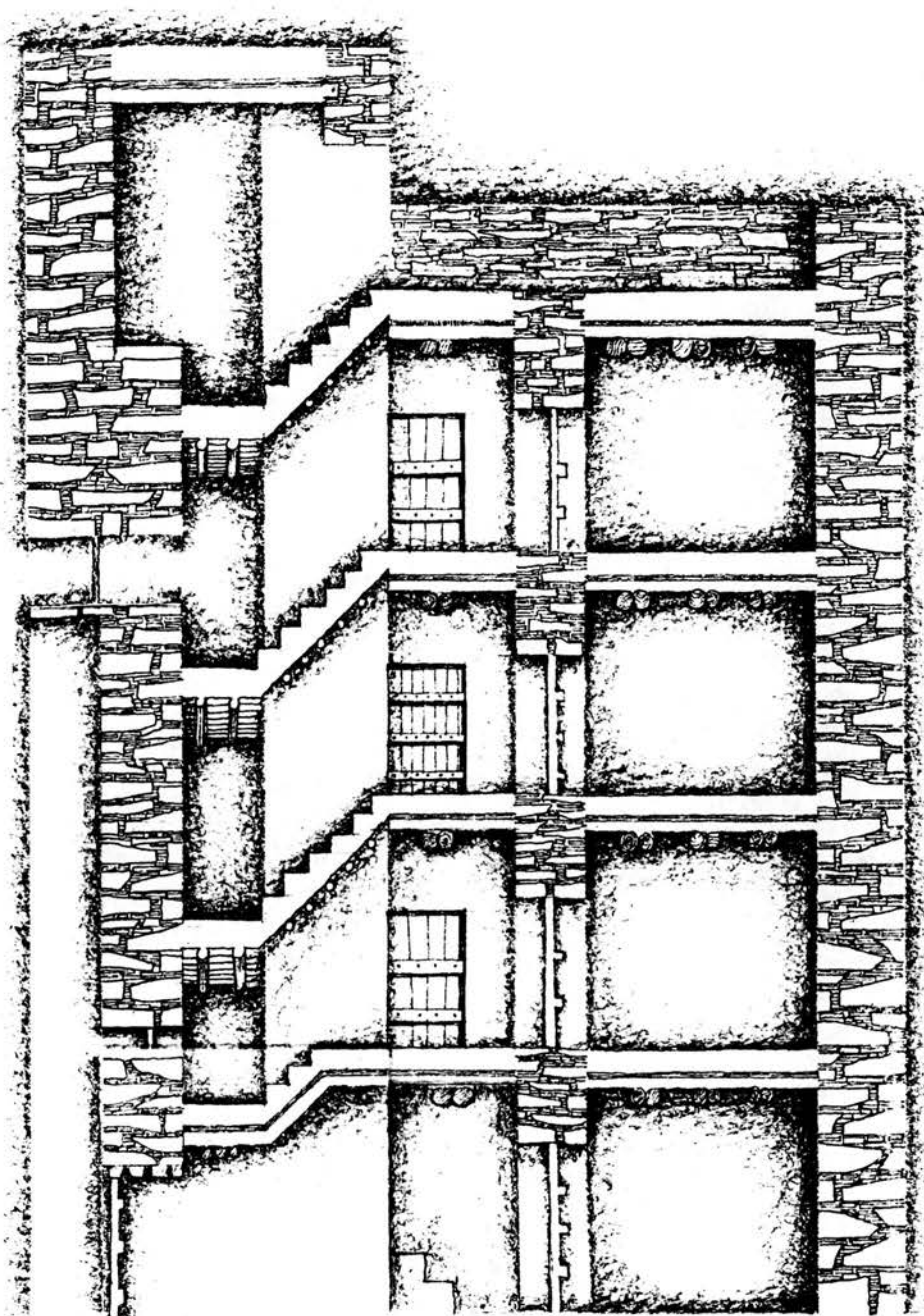
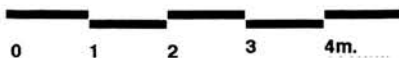


Figure 6.3.



A section through the tower.

One of the two large rooms (5) on the fourth floor is used as a reception room (*majlis*). The room is approached by a door at the centre of the lobby hall. It is supplied with a bench along three sides and is interrupted by three masses of stone rubble used as back-rest. At one end of the room is a depressed square used as a fireplace. There are three windows on three sides which light the room. The floor is covered with a mat.

The room on the other side of the reception (6) is used as a place to cook food . In local terms it is known as *al-malhab* which means the fire place. At the end of the room is the place for preparing food. In the corner is a mobile traditional grinder (*riḥa*). There are three fixed ovens (*mayāfī* , pl. of *mīfa*) to cook the food. Firewood (*al-ḥaṭab*) is piled-up at the other end of the room . The room is ventilated by two circular holes (*ṭāyah*) in the roof. As a result of burning the wood, the walls of the room are covered with a black film of smoke.

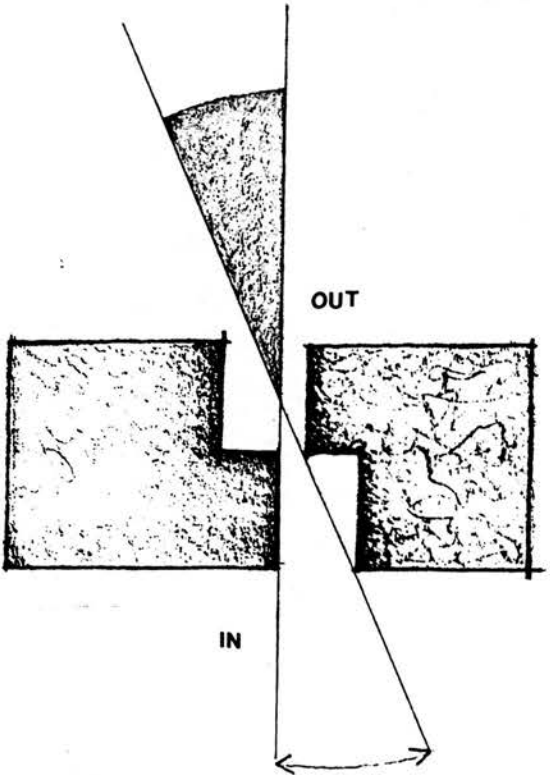
The rooms on other floors are free of permanent or temporary furniture. No benches ,cushions, mats, or rugs are to be found. On the ground floor the rooms are currently filled with grain. The rooms measure three meters in height and are kept clear of barriers, and this produces a sense of spaciousness. The staircase is wide, which guarantees easy traffic across the floors of the tower. The doors of the rooms are also high , so that one does not need to bow to be able to pass through these doors. The walls on the ground floor are finished with a cement-like material (known locally as *al-qadād*) to prevent the disintegration of the wall finish. The ceiling of this floor is constructed of stone slabs to prevent the collapse of the tower in cases it was set on fire by enemies. All these features are original to this tower and can't be readily found in other towers across the highlands.

The evolution of the tower

The present owner of the tower speaks of a man called Fāḍil who built the tower which carries his name. The time of building the tower is unknown. We might, however, be able to date the time of building the tower. According to the account of the owner, the life span of the tower has been covered by seven generations starting from the original builder to the present owner. We can estimate the age of the tower if an average of each generation can be determined. The original builder is exempted from the estimate, on the assumption that he was too old - when he built the tower - to cover a complete generation. If we estimate that each generation covers thirty years - as a minimum estimate - and fifty years - as a maximum estimate - we end up with a rough limits to the age of the tower. The minimum estimate is one hundred and eighty years and the maximum estimate is three hundred years. Āl Sa'ūd (1989, P46) estimates that the tower is 400 years old, without explaining how this number is determined. In any case the precise date of the tower is better studied by an archaeologist.

The exterior walls of the tower are vertical, thereby producing a tower of perfect rectangular form. Old villages in the south section of the highlands always exhibit towers of perfect forms in compact villages. But newly-built towers exhibit pyramidal forms. This indicates that the tower is of old origin. Residential towers, at least those recently built, are provided with roof terraces on their tops to gain sunlight and to give the people some relief when they need to escape from the interiors. The absence of these features from the tower is an indication that the tower belongs to a group of towers which are not designed as residential towers.

The design of loopholes on the third floor provides a clue to the age of the tower. These holes are designed in a less developed form than the typical loopholes observed in other towers. The peculiar shape of these holes (figure 4) suggests that they are older than the typical ones because they are less developed. A typical loophole built in a much later period is more efficient because it offers maximum scope of vision and reduces the risk of being exposed to shots from outside.



According to the current owner ,the tower has been used as a grain tower, a defensive tower, and as a residential tower. These three uses are not stated in chronological sequence. Therefore, the original purpose of the tower, and the development that occurred as the tower evolved, will be now discussed.

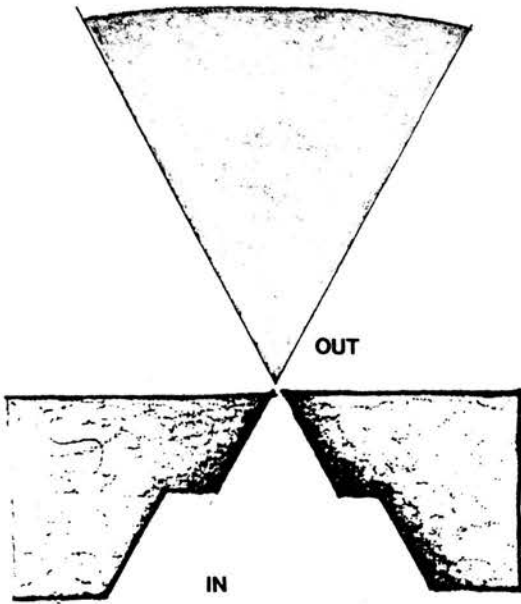


Figure 6.4.
(top) plan of a loophole on the third floor, (bottom) plan of a typical loophole

The tower is disengaged from other buildings. Unlike other towers which are built inside villages, this tower is built beside the fields. This location holds a clue to the original purpose of the tower. Defensive and residential towers benefit most from local topography and are built in high and fortified locations. But this tower is not built in the kind of hilly location that would suggest a defensive purpose. The location is connected to the neighbouring fields to the west side of the tower. The closeness of the tower to the fields facilitates the process of storing grain. People cultivate grain and store it immediately in the conveniently located tower. Had the tower been built on higher ground - or inside one of the deserted villages on both sides of the tower- people would have needed further effort to transfer the grain. Building granaries besides fields is found in many villages of the region as we have seen in the granary of al-ʿArāba village in Chapter Three.

The entry to the tower is associated with the duct and is on the west side of the tower. We have seen in Chapter Four that the climatic conditions do not favour this orientation. Had the entry and the duct been provided on other sides of the tower, this would increase the distance, and thus the time, required to load the grain into the tower. Therefore the entry to the tower in association with the duct is oriented towards the fields to facilitate the loading and unloading of grain.

The image created by the external appearance of the tower suggests a storage-like structure more than a building used for living. This is manifested in the absence of the windows found in residential towers. Windows are signs of life. Their absence from the tower indicates that the tower was not designed originally as a residential tower, otherwise all the floors would have been supplied with windows; and this is a feature monumentally denied by the uncompromising solidity of the tower.

In his answer to the question of the purpose of the tower, the current owner stated that the tower is used as a *raff* which is the local term for a grain tower (Prochaska, 1982, 100). In Arabic the word *raff* means a shelf. This indicates that the tower is centred around grain. Had the tower been used as a living tower, it would have been described as *hisn* or *qasr*, the latter term being used for the tower-house.

With the exception of the fourth floor, where the living quarter are located, the tower of the inside holds few clues to indicate that the tower had been used as a house. Residential towers are usually decorated, painted, and have access to sunlight. None of these features are found on the other three floors.

The owner's account is indecisive as to whether the initial purpose of the tower was to store grain, or to host people. But in the process of using the tower as a dwelling place a valuable clue has emerged which sheds light on the initial purpose of the tower and the process that followed. According to the testimony of the owner, the ownership of the tower has descended from the original owner to his grandchildren. One of these grandchildren sold one room of the tower to the grandfather of the present owner. Then another room was sold, and as time passed, the whole tower came to be owned by the grandfather of the present owner who now is the sole owner of the tower.

In this statement, one assumes that the rooms of the tower are used as grain chambers used by the families dwelling in the neighbouring villages. The idea of a collective grain tower divided into rooms is common across the highlands, as we have seen in the grain tower of al-Ārāba in Chapter Two. And for unknown reasons—probably for immigration reasons, triggered by plague, flood, famine, or tribal warfare, which are common phenomena across the highlands, the ownership of some

rooms has shifted to new villagers. As time passed, the ownership of the tower finally fell into the hands of a single owner; the grandfather of the current owner.

Had the tower been built as a residential tower -and had the rooms of the tower been used as living rooms- it is difficult to accept this assumption. Selling a house -or part of it - is against the norms of the local people and would be met by public disgrace and expulsion from the village.

The subsequent changes made to the tower did little to change its form or appearance. From the outside only the windows on the fourth floor attest to the residential role of the tower. The fourth floor is an exception in that the reception room was supplied with a bench, and the room where the cooking was done was supplied with ovens. Therefore the tower has preserved its initial design features despite subsequent modifications.

From the outside the priority of storing grain is reflected in the uncompromising solidity of the tower. The loopholes indicative of the defensive purpose of a tower; a theme to be discussed shortly, are hardly to be seen. Only by means of decoration can they be detected. The windows on the fourth floor do little to suggest a fundamental change in the purpose of the tower.

An examination of the facades (figure 5) indicates that they have been subject to changes. This is evident from the arbitrary and incompatible window layout on the fourth floor as compared to the highly decorated and carefully laid out loopholes on other floors of the tower. The repetitive use of loopholes, and the constant rhythm they follow, suggests that they are original, while the windows have been added later.

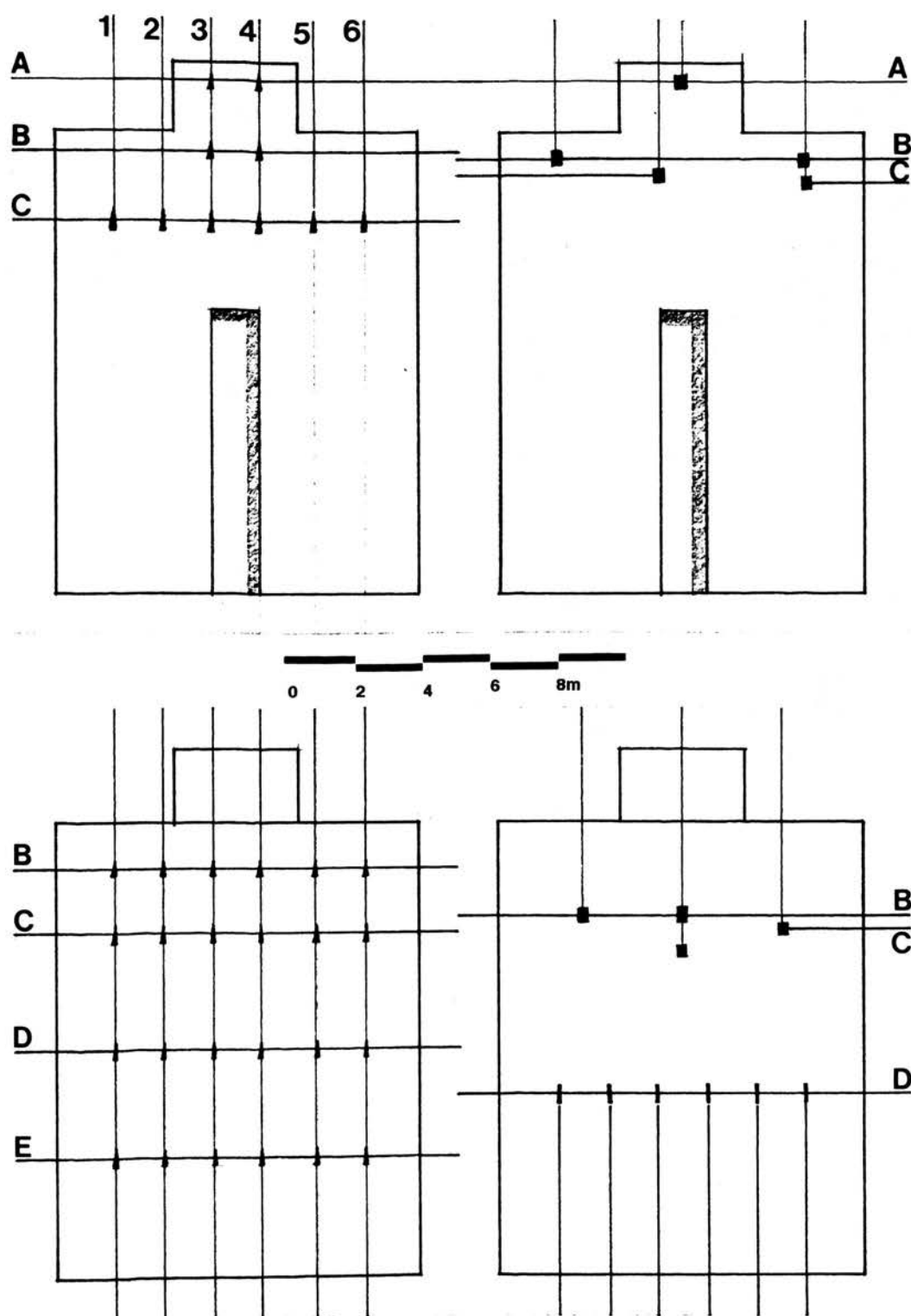


Figure 6.5.

The layout of loopholes and windows of the west facade (top) , and the east facade (bottom)

Had the tower been designed as a residential tower, the windows would have been designed in compliance with the rooms of the fourth floor. But the window in one of the rooms on this floor (figure 6) contradicts this criterion. The window does not respect the room . It is not located in the centre of the wall as it should have been, but was pulled to the left. This means that opening a window in the centre of the wall was not a major factor in the design of the room. Therefore the room must have been used as a grain room first and later was provided with the window so that it could be used as a living room.

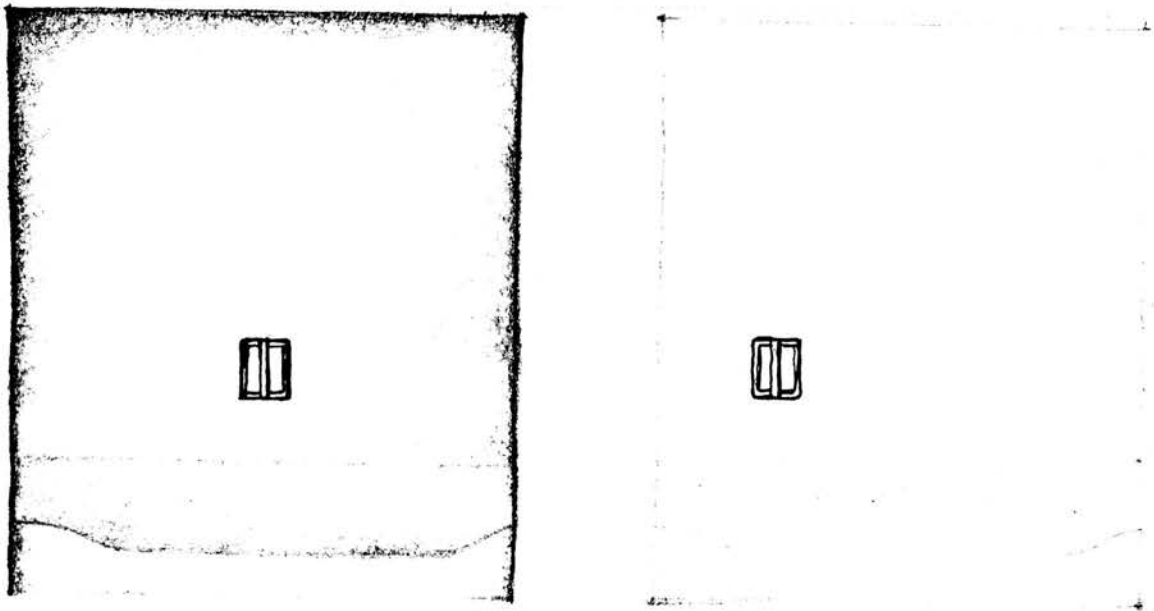


Figure 6.6.

(left) The normal location of the window, (right) the actual location of the window

The indoor climatic conditions and their impact on grain

The indoor climatic environment must be suitable to ensure successful storage. Store rooms must be free of insects and mice that can breed in the grain, thus causing

heavy damage. Once harvested grain goes through a process of chemical changes which can ultimately lead to the contamination of the harvest, long after it has been harvested (especially in a warm humid environment) if the suitable environment is not met. To prevent that from happening, the grain rooms must be cold, less humid, and provided with only a small amount of oxygen, to reduce the process of respiration as stated by Rickman (1971, 1) :

" Grain must be kept dry when in store. The safe limit of moisture in stored grain is usually between 10 and 15 0/0 depending upon the type of grain, the climate, and the length of storage. Grain must be kept cool, if possible below 60 F, and free from vermin, which tend to breed if the grain overheats. "

The equivalent temperature for 60 F in Celsius terms is 28 C. The local outdoor temperature is always lower than 28C (see Chapter Three, P. 123) . The indoor temperature is often lower than this, owing to the lack of heat sources such as firewood or other means that could provide warmth and overheat the indoor temperature.

Moisture provides a desirable atmosphere for insects to thrive on grain. The moisture reaches its highest levels in the areas immediately along the escarpment. But this tower is located at a considerable distance from the escarpment (15 kilometres) which contributes to the low humidity . To avoid high humidity inside such towers, they are sealed except for loopholes , so that the humidity of the outdoor temperature does not infiltrate inside the tower and provide a suitable environment for pests to destroy the grain. This explains the solid, massive character of the tower and the absence of large windows.

As a protective measure, grain is mixed with a soft type of sand called locally *nīṣ* to prevent the destruction of the grain caused by its most feared foe; an insect

called *al-qamla al-sawdā* or the black louse. Another technique used to achieve this is to pour the grain with hay extracted from the straws of the grain during the harvest process, or to coat the ground with mud mixed with chaff. For the same purpose, humid and sandy locations are abandoned, while solid and rocky ground is favoured because they discourage insects and weevils which thrive on grain.

Underground granaries (*madāfin*)

For long-term storage, people use underground granaries. These granaries are much colder than towers. Therefore they keep the grain for a longer time ; namely up to fifteen or twenty years. Such granaries are carved into the rock and are divided into chambers so that each family has its own chamber. These granaries are completely sealed. Each room is approached through a half-meter aperture on the roof of the grain chamber. Before opening them, and to avoid suffocation caused by gases which result from long-term storage, these chambers must be ventilated by removing the aperture cover for at least two days, before someone jumps down and bring the grain up. These chambers are found in this tower. They are approached by permanent stone steps projecting out of their walls and by ropes. These chambers are not marked, except by small hole covers, so that they can't be invaded if the tower comes under attack.

A brief description of similar granaries comes from the time of the Egyptian invasion of Asir in the nineteenth century. The invading army came across one of these granaries in the fort (*qal'a*) of Khamīs Mushait. The fort was built by 'Alī b. Mujaththil, the chief of Asir, to stop nomads raids on the villages of the highlanders. According to Tamesier (Arabic tr. *Āl Zilfa* , 1993, 288) this is a description of an underground granary in that fort:

" According to the orders of Basha Amin Bik, the military engineers (*muhandisūn ʿaskariyyūn*) started to dig and after half an hour they found five holes sealed with what looked like wooden panels (*alwāḥ*) in different locations. As the general wanted to know what inside these holes, he ordered one of the troops of the engineering team (*firgat al-handasa*) to go down inside the fourth hole. We tied the man to a rope and drooped him down. When he got down he felt pain and asked us to get him out. Our companions (*zumala'unā*) thought that he might have been afraid so they encouraged him to be patient and finally we pulled him up. He was dead as he had suffocated owing to the lack of air underneath the hole. Each one of us explained what had happened according to his own thoughts. Some people said that bad spirits (*arwāḥ shirrīrah*) had killed him. Others thought that the nomads hiding down there had killed him. Finally after air had percolated to these holes a large number of troops went down easily and we found large amounts (*kammiyya kabīra*) of agrarian equipment. Some baskets of flour (*daqīq*) and expensive chairs embellished (*muhallāh bil zakhārif*), carved (*wal naḥt*) and coated with copper and iron. " (my translation).

Built by the provincial ruler of the highlands the *midfan* described here is larger than the Fāḍil tower. This chamber contains, besides flour, other items which represent the importance of the fort.

To avoid the suffocation caused by gases in these chambers, people light a small fire, tie it on to a rope and drop it down. If the flame keeps alight, this means that there is enough oxygen and it is therefore safe to climb down to these chambers. If the flame dies, however, people know that there is no oxygen and that they could not safely go down. So they keep the apertures of these chambers open for at least two days. This practice is also used in water wells where people are also subject to suffocation caused by the gases generated by the electric motors which pull water up.

The defensive features of the tower

But the tower as stated by its current owner is also used as a defensive tower. This is manifested in three main features. The first one is peculiar to this tower. The large size of the tower makes any attempt to penetrate it a difficult task. The disengagement of the tower from other structures in the empty landscape removes any

chance of getting into the tower. Had the tower been physically connected to other structures, houses for example, it could have been easy for attackers to get into the tower through these structures.

The second measure of defence is expressed in the duct. The entry point into the tower is crucial. The duct in the tower enables the occupiers to defend their tower from points of advantage. In warfare the person standing on higher ground has a better chance in both attack and defence. He drops objects down to harm his attackers. On the other hand, attackers find it difficult to go up and to defend themselves. The norms of warfare favour erecting the duct as an effective mean of defence.

The third measure is in the design of tower doors which in 'Asīr are unusually small to provide safety to the residents of these towers. They have locking systems so well designed that they require precious time to open, time attackers would lose in their attempts to unlock the door. As they are busy doing so, they become easy targets for missiles raining down through the duct.

Grain towers and defensive towers are similar to each other even in their most expressive feature, namely their holes. Grain rooms must not be exposed to external climatic conditions. The narrow, thin loopholes do little damage to the grain as they do not allow the outside temperature and humidity to get in. This makes the dual usage of the tower as a grain and defensive tower very sensible. Thus, what with the solidity of the tower and the small size of loopholes, a grain tower can be used as a defensive tower, and a defensive tower can be used as a granary. This explains the difficulty of distinguishing whether towers across the highlands are defensive or grain towers.

The use of the tower as a watch-tower

The tower of Fāḍil is used as a watch tower . The tower protects the market and the prayer compound to its west side from sudden invasion. When the compound is used as a market, it is the responsibility of the head of the tribe to provide protection for all people inside the compound. He sends guardsmen to the tower to watch the surrounding area. When the compound is used for prayer those at prayer become unprotected easy targets for attackers. Therefore, the tower provides protection as it commands good views in all directions which makes for optimum surveillance. This is denied to other watch towers built in the vicinity because they are too far from the compound, and they do not command a good surveillance point to the two ends of the depression. The two watch towers in the east side (I) are oriented to face the tower and so is the village (C). The location of the tower at the centre of these structures indicates that it plays a central role in the watch and the surveillance system of the immediately surrounding area.

The sequential development of the tower

In the light of the physical context and the account of the owner, a brief statement of the purpose of the tower and the process that accompanied its evolution can be made. The tower was built by Fāḍil as a grain tower. After his death the tower was owned successively by a large number of families among his descendants; each family had its own chamber inside the tower. In the long term -and for unknown reasons -the number of families using the tower dwindled. This situation has enabled one family gradually to acquire control of the tower through either an exchange of fields, or by payment in grain. When the ownership had devalued completely on to the new owner- the grandfather of the contemporary owner- the top floor of the tower was used as living quarters for the new owner.

It is better to think of the tower as a large structure used to store grain. As a result of its large size, its solidity, and the presence of holes for ventilation, it became easy to use and multiply these holes as loopholes so that the tower could also be used as a defensive tower. The pivotal location of the tower commanding excellent views on the fields and the surrounding area made it an ideal platform for watch and surveillance. As tribal warfare ceased to exist in recent times, the tower was converted into a residential tower.

In residential towers the living quarters, for security reasons, have always been on the upper floors. This tower is no exception. Here too The living quarters- when the tower was used as a residential tower- were confined to the fourth floor. Low floors are abandoned because they are closer to the ground. Higher ground has always been favoured for reasons of security and privacy.

Throughout these changes the use of the tower has not been restricted to a particular function, but rather the tower incorporates new uses in addition to old ones. When the people transformed the tower into a tower-house, they also kept using it as a grain tower. And when the people built it as a grain tower, they must also have used it as a defensive tower. This feature is not unique to this tower; other towers across the highlands have these features too, as we shall now see.

The grain towers inside Zahrā village

The village

The village of Zahrā (figure 7) is built on top of a hillside, from compact two-storey stone houses. The village has a linear form oriented eastward. This can be

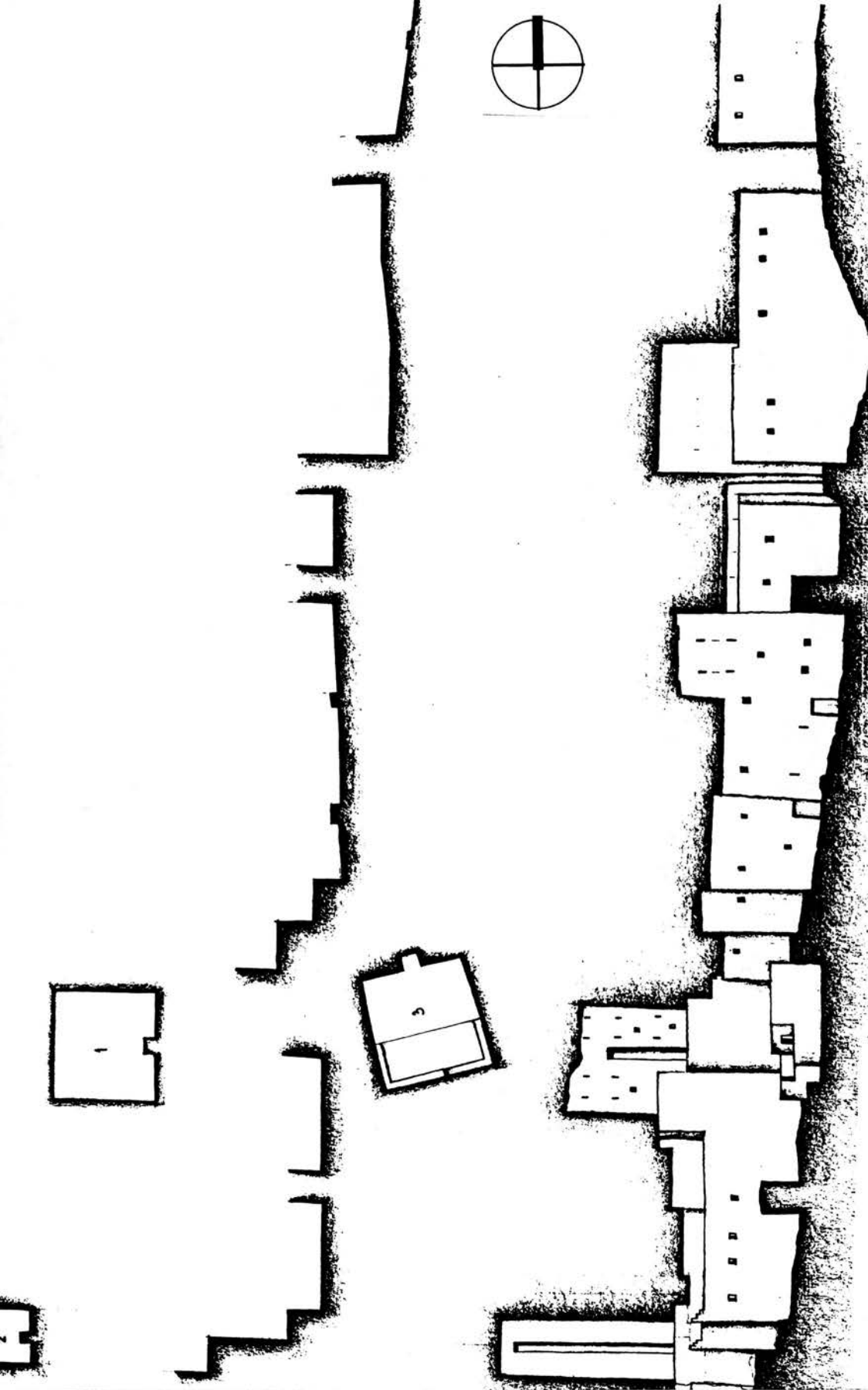


Figure 6.7.

(Left) a schematic plan of Zahrā village showing the tower of al-Ṭāl'ī (1) , the tower of Āl Mudhhib family (2), the village mosque (3), (right) the east elevation

detected from the windows punctuating the houses from the east. The west side is sealed to prevent the infiltration of the cold west and south-western wind. The village has a street (*sidda*) for pedestrians which runs along the centre of the village and terminates in the two gates at the southern and northern ends of the village. To provide security for the villagers the two gates are locked after dusk and reopened at dawn. All houses open into the main street. Access to the fields, and to the mosque, which is outside the village on the eastern side, is through gateways which interrupt the continuous facade wall of the village. The people of the village belong to Rabī'a wa Rufaida of 'Asīr.

The grain tower of al-Ṭāl'i

There is more than one tower inside the village. The largest and oldest of them (figure 8) is located at the highest point on the southern side of the village. The tower is called (al-Ṭāl'i), which means " the ascending". Like the houses of the village, the tower is oriented eastward, as revealed by its duct which opens into the main street. The west side of the tower, like the west side of the houses is neglected.

Currently the upper part of the tower has collapsed. The remains of the lower part show similar design features to the grain tower of Fāḍil. The plan of the tower (figure 9) is laid out in a square divided into three parts. According to the informant used for this material, the central part is used for circulation and the other two parts are used as grain chambers. This organisation is repeated in all five floors of the tower. The loopholes punctuating the tower on the east side are designed in a similar way to those of the Fāḍil tower. The tower is bare on the outside and the loopholes are marked by decorative white quartz.

The tower is surrounded by the compact two-storey houses of the village. Built on the highest point of the hillside, the tower was intended to be used as a defensive tower, as revealed by the surviving loopholes. The defensive purpose of the tower is related to its location. The village and the tower are not surrounded by watch towers like that of Fāḍil. This is probably due by the local topography which allows for the tower to work also as a watch tower.

Like the tower of Fāḍil, this tower was originally built as a grain tower and after a long time was used as a tower-house occupied on the fourth floor by a family from the village. During this period, the other floors of the tower were used as grain rooms. Unfortunately the dilapidated condition of the tower inside prevents any further description.

The reason for transforming the tower into a tower-house is unknown, but we can speculate on one possibility, namely that this was caused by the ever-increasing village population. Compact villages are densely populated. The village has ninety male adults, not counting children and women, capable of carrying rifles; this is a traditional means of measuring the size of villages across the highlands. This has led the people of the village to store grain privately in their houses or to build new grain towers. This process has eased the pressure on the original tower and enabled the people who still use it as a granary to use it as a tower-house. The family who contributed most to the building of the tower is the family that occupies it, after the other families have placed their share of grain in other towers such as that of the Mudhhib family.

The grain tower of Āl Mudhhib

Unlike the tower of al-Ṭālī, this tower is in good condition. It was built long

The tower was owned by three brothers and each one had an equal share of chambers. The fact that the tower was owned by brothers indicates that owning and building towers is based on familial connections. People share their capital of grain with their closest relatives.

But the tower is not used only as a granary. It is connected with another round tower outside the village on the north side built to defend the fields and the livestock of the local people. The tower is provided on all side with loopholes, except on the north side which overlooks the village. During the night the roof of the tower is occupied by one or two guards to protect the village and its neighbourhood.

The location of the tower enhances the surveillance capability of its users. The tower is built at the extreme south side of the village to watch locations not overlooked by the tower of al-Ṭā'ī. Therefore the family of Āl Mudhhib built their grain tower not only to store their grain, but also to help protect the village on the south side.

Organisation

The tower (figure 11) has six square floors. Each floor is divided into two halves. The first half is devoted to the staircase, which is carried by wood beams projecting out of the wall in the middle of the tower and the exterior front wall. The second half accommodates the grain in chambers. Each chamber is made of two halves, approached through an entrance aperture which is placed above the staircase. The first half is provided with two shelves, one above the other. These shelves, locally called *aḥwād* (pl. of *hawḍ*) and comprising wooden panels inserted into the walls, accommodate loose grain. The other half of the room is filled with baskets of grain. This system is repeated on all six floors.

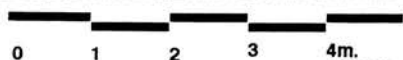
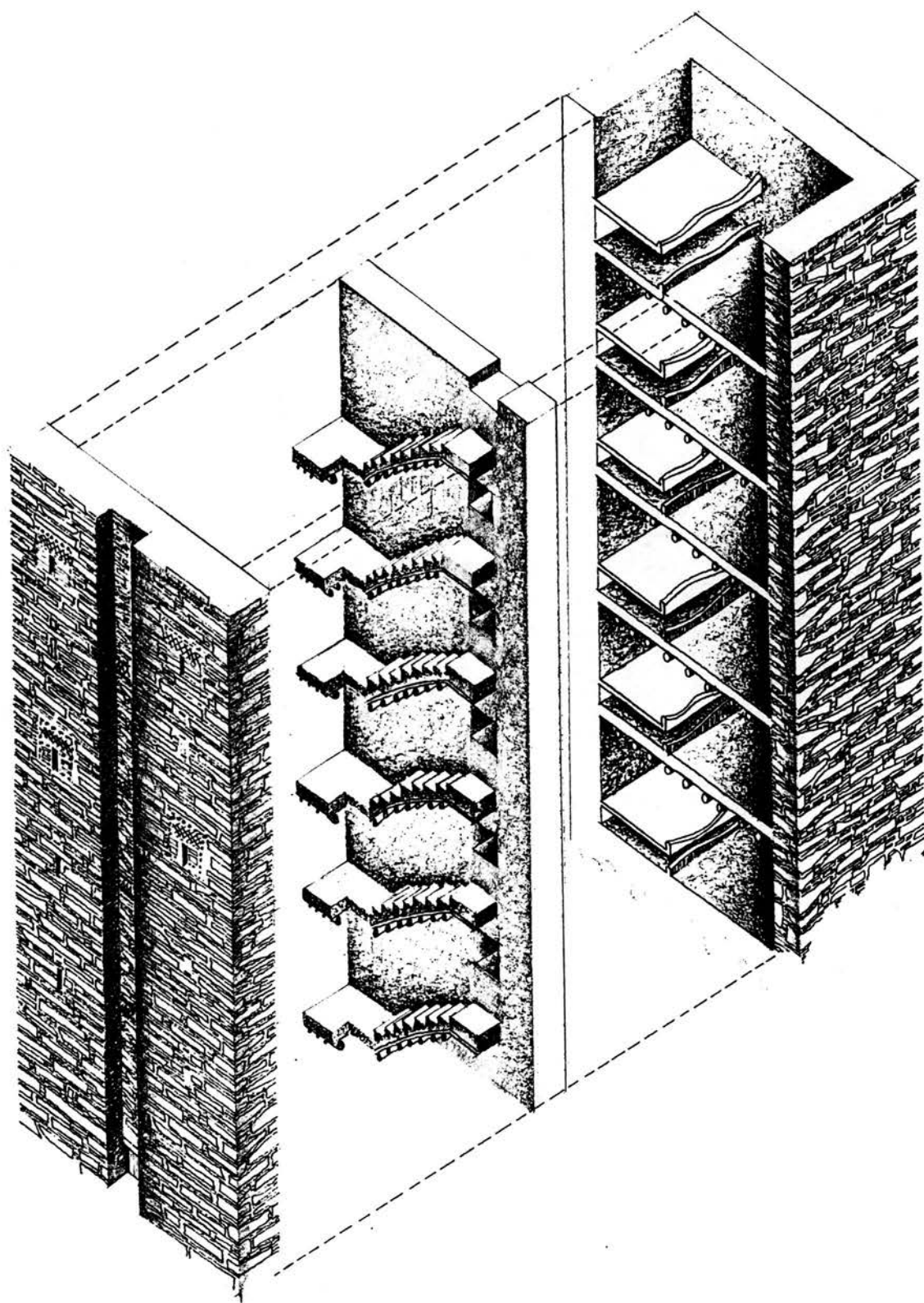


Figure 6.11.

Isometric view for the tower of the Āl Mudhib family showing grain compartments.

These chambers are used also for defensive purposes. If the village comes under attack by other tribes the male adults of the village take up their positions inside these rooms and shoot at their attackers through the loopholes. The tower is also defended by means of the duct which is used to drop stone missiles from the rooftop on advancing enemies.

The three grain towers overlooking al-‘Auṣā’ village

The village

The village of al-‘Auṣā’ (figure 12) is located in the central section of the highlands in the depressed plain of Tanūma which was described by Prochaska (1977, 120). The village is built of two-storey stone houses. Some of the houses are whitewashed, others are bare. The houses are oriented eastward and the west sides of the houses are free of windows to avoid the cold winds of winter. The village is occupied by a sub-clan of Banī Shihr called Āl Yaḥmad

The village is responsive to the outside climatic conditions. This can be seen from a number of features. The village is not as compact as the village of Zahrā. There are spaces between the houses which have larger windows than those seen in Zahrā village. There are also balconies on top of some houses where people spend time during the summer. The houses are bulkier than those of Zahrā and most of them are crowned by stone finials.

The village mosque is at the south edge of the village and is surrounded by grain terraces. The design of the mosque is typical of other mosques of the region. It comprises the prayer room and the courtyard. The corners of its roof are marked by bulky stone finials. The *miḥrāb* is crowned by a conical shape. As with the mosque of



Figure 6.12.
The village of al-'Auṣā', and its grain towers.

Zahrā village , the mosque is the only whitewashed building in the village. The mosque is bordered on the north by the public compound (*al-mandā*) where social gatherings occur and announcements are made after prayers.

The towers

The village has three grain towers built on three hills flanking the village. Two towers are built on the west side of the village, and the third tower is built on the east side. These towers are similar in their external features. They are veneered by light tan material (*al-qadaḍ*). Each tower preserves its own grade of the colour which matches that of the rocky landscape surrounding the village. The towers face the fields to the east. Although this orientation is favoured to avoid the devastating effect of the rain and the wind of the west and the south-west, it is also favoured for cultural reasons. The village is sporadically raided from the east by the unsettled tribesmen of Shahrān, whose raids inflict heavy damage on grain and livestock. This reason suggests a defensive purpose for the tower, as we shall see later.

The south tower is called Hisn Āl Yaḥmad after the nuclear family that built the tower. The second tower is also named after another nuclear family in the village. Naming these towers after familial names means that the towers are built, used and owned only by the members of these nuclear families. The third tower, the oldest, is located on the highest point of the hill surrounding the village from the east. This tower is called al-Ghāyid. The meaning of the name and the reasons behind it are associated with symbolic reasons that will be explained shortly.

The ducts of these towers are sealed and uninterrupted all the way up and at the top they terminate in flat stones on the roof-lines. These ducts are deep and are supported by wooden lintels on the front doors. The veneering the towers has meant that they lack the punctuation technique of quartz.

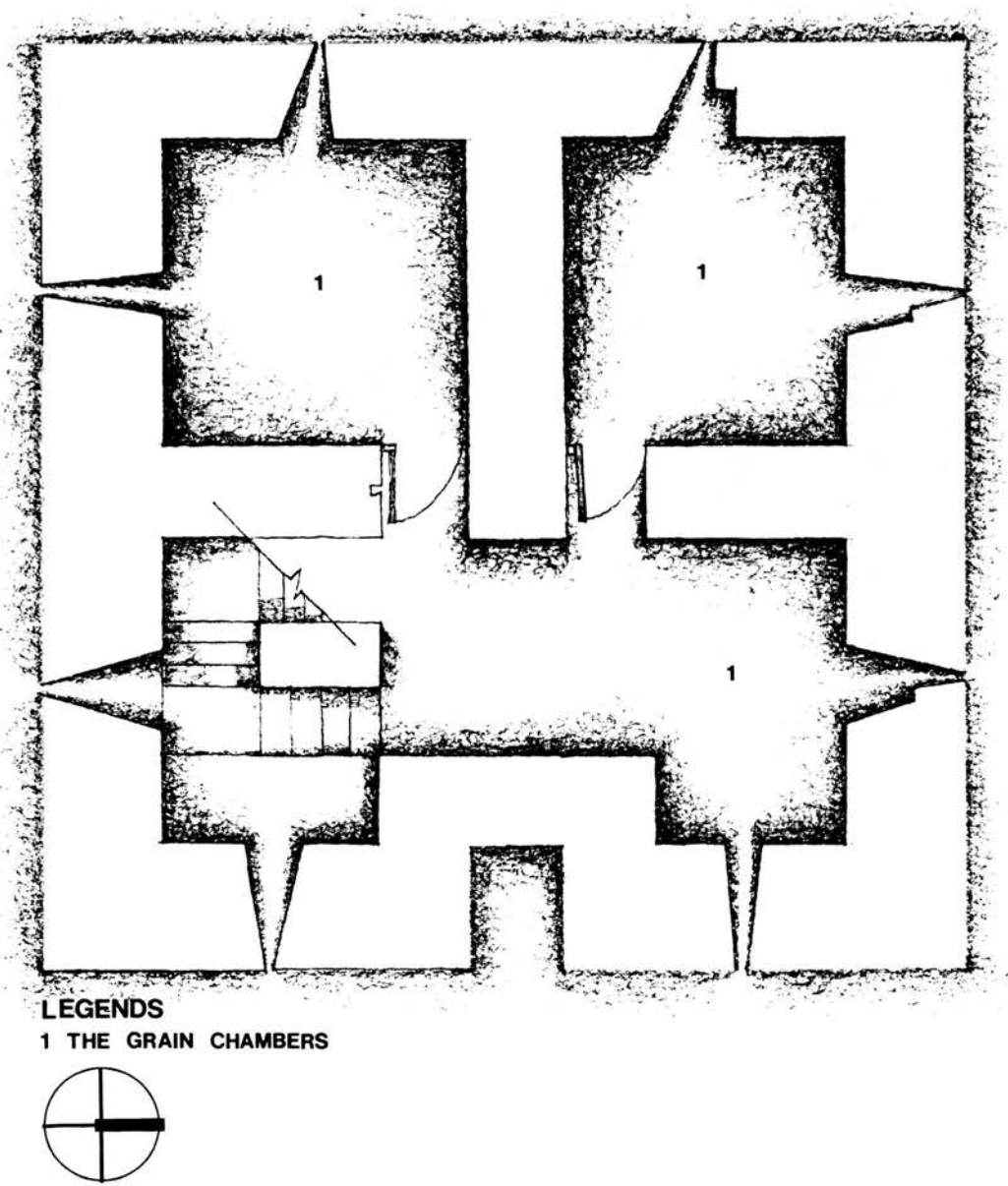


Figure 6.13
A typical floor plan of the towers.

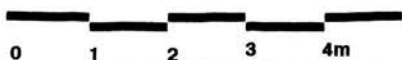
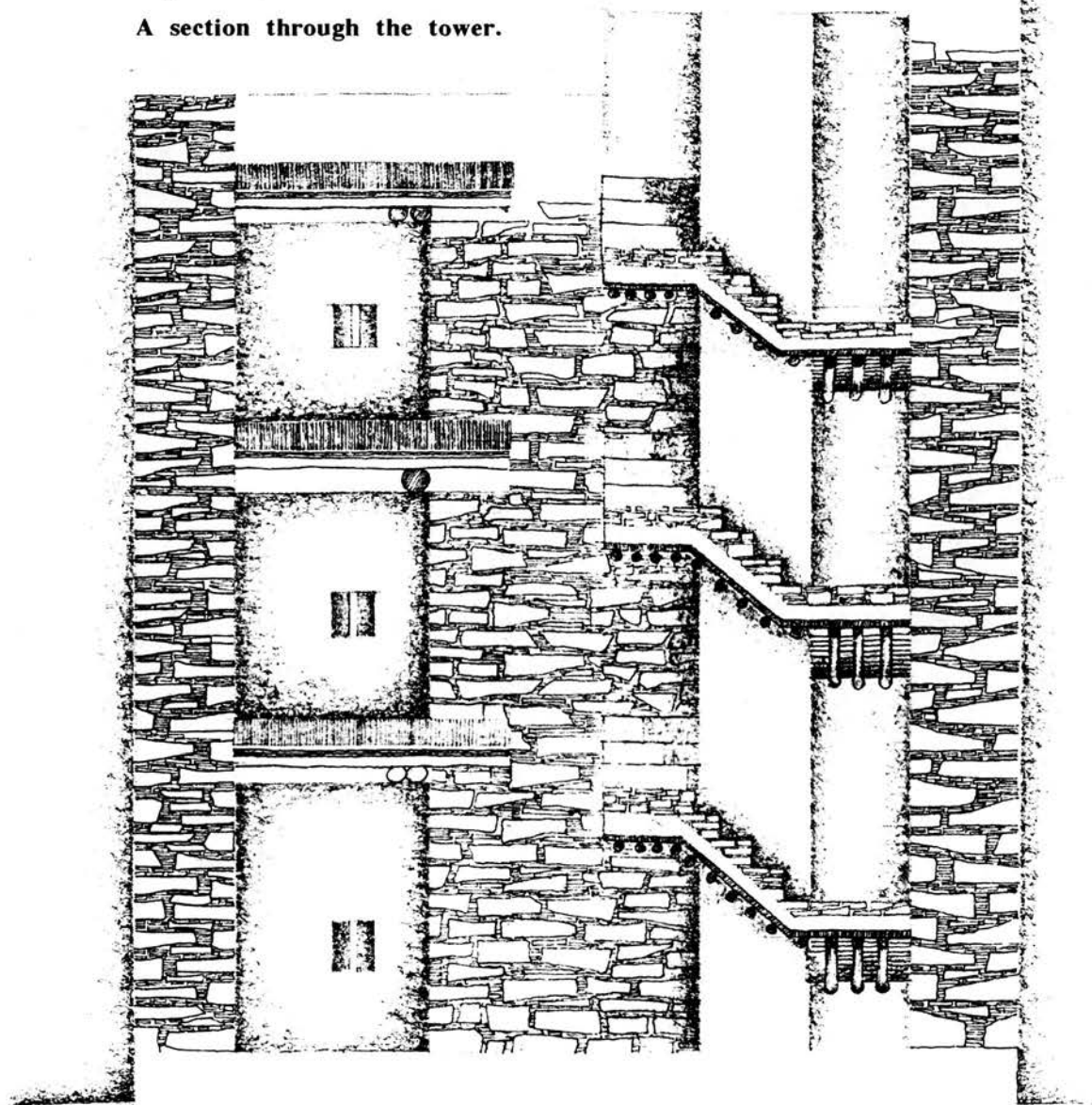


Figure 6.14.

A section through the tower.



Organisation

Each tower has three floors. Each floor is divided into four parts by thick stone walls, with one part occupied by the staircase and the other three parts being used as grain chambers. Each chamber is called *qaryah* which also means "village". The grain chambers are equal in size and in treatment. Each chamber is square in plan (figure 13), measuring about 2.5 meters.

Unfortunately the floors of these towers have collapsed which rules out further description. However the grain chambers, according to local informants, were spacious and so was the staircase. They had no dividing partitions similar to those of the Āl Mudhhib tower and grain was put in baskets before storing it in the chambers. These are divided according to the members of the nuclear family and each family has its own chamber.

The preference for high ground and its cause

Building grain towers on rocky ground is familiar practice across the highlands. Muddy and sandy ground is not used for grain towers because it provides a suitable environment for insects, foxes, rabbits and other pests which damage the grain. High ground is always rocky, and is therefore preferred because it does not allow such pests to thrive and damage the grain.

High ground also provides a solid basis for towers, acting as stone foundations. The need to support the tower is thus met with minimum effort. The tower of Āl Yaḥmad is built on a stone platform called *al-ḥadhya* which means "the shoe". Built of stone, this platform discourages insects, other pests, and birds from dwelling underneath the tower, and thus contributes to the safe storage of grain.

But these towers are also used for defensive purposes. When the village is attacked, the male adults of the village retreat to these towers and defend the village from behind the loopholes and the roofs. Built on the highest points of the local landscape, these towers provide a suitable vantage point from which to see the surroundings and to defend the village efficiently.

The evolution of the towers

The first tower to be built in the village was that of al-Ghāyīḍ. The word means "the one who inflicts pain and sorrow". This name has symbolic association. It was only after long attempts that the tower was built. It commands a view over another village further down the plain. The residents of that village were annoyed by the tower, and protested against it because, according to them, it invaded their privacy. But the residents of al-ʿAuṣāʾ village persisted in building the tower. And when it was finally built it was given this name to indicate victory.

The size of the tower suggests that there has been a demolition of its upper part. A study made by Abū ʿAbs (1985, 39) is a witness to this phenomenon. He states that the people of Tanuma have developed a norm that eases tension among neighbouring villages, in that the upper parts of towers which command views over other villages are demolished. This is probably the reason behind the low height of this tower (al-Ghāyīḍ). Thus a considerable part of the tower has been demolished to meet the demands of the neighbouring villagers who saw in the high tower not only an invasion of their privacy, but also a sign of defeat.

The same reasons that led to the building of the Āl Mudhhib grain tower in Zahrā village apply here. As the village population rose so did the need to build new towers to contain the increasing shares of grain. The two towers named after their families were built to contain the grain of these families that could not be accommodated by the tower of al-Ghāyīḍ, and to provide protection for the villagers on the west side.

The irregular roof-lines of the two familial towers are based on defensive requirements. The stone rubble of the upper part of these towers is loose, producing an irregular outline for their roofs. According to Abū 'Abs (1985, 17) this is done for two reasons. Defenders occupying the roofs of the towers use the stones as missiles thrown onto attackers. These stones would fall on attackers if they invade the tower from below using ropes weighted with stones as grapnels to catch onto the top of the building. This defensive practice is found in other stone towers across the highlands.

Conclusion

In the agrarian society of the 'Asīr highlands, grain is at the hub of economic and social life. It is not only used as food, but as seen in Chapter One, as a medium of exchange with other commodities. In this respect grain resembles money and grain towers are like banks. Therefore grain must be protected in secure buildings such as towers.

People build towers to accommodate grain , and to protect it against thieves, attacking tribesmen and scavengers. Towers are safer than low-rise structures. They are difficult to storm, which works to the benefit of their owners. The connection between the economic importance of grain, and the defensive requirement to guard it, is responsible for the choice of the tower as a prototypical form of these granaries.

To discourage insects and mice from damaging the grain, these towers are built on rocky ground on high locations .

Grain towers are the first communal structures built in villages. They are owned by the entire population of a village, and are named after the first settler of the village, or are given symbolic names. The size of these towers is greater than that of other structures in the landscape, which indicates the significance of grain as the capital of the people. When the population of a village increases, new grain towers are built to accommodate the extra grain. The new towers are often named after the families that built them.

Transforming the original village grain tower into a tower-house is a landmark feature of the evolution of towers in the highlands. This process is accompanied by the break-down of the village population into more families, where each family has its own grain tower independent of the rest of the village population. The breakdown of village population is reflected in the size, the organisation, and the articulation of these towers. The first grain towers of villages are larger than the familial towers. They are divided into spacious grain rooms. Familial towers are smaller than communal towers and are divided into equal compartments.

The orientation of these towers as revealed by their ducts is motivated by the requirements of loading and unloading grain. In these towers the ducts and the front doors of these towers face the side that ensures the shortest distance for transporting and storing the grain. This explains the constant orientation of the towers towards the fields.

To maintain stable climatic conditions inside these granaries, they are sealed off except for a few thin holes used to allow a little ventilation which is vital for proper storage. Sealing the towers apart from this small number of holes makes them ideal for defensive purposes. Meanwhile these holes are used as loopholes and the towers are used for defensive purposes.

Building towers on hillsides is driven also by symbolic reasons. The towers are the most important buildings for these people. They accommodate the community's capital of grain, defend the people against attackers, and declare the people's authority over their land. Therefore they are built in locations where these purposes can be successfully realised, in other words on high ground.

Although grain towers are used for defensive purposes, defensive towers have their own features as well, as we shall see in the next chapter.

THE DEFENSIVE DUCT TOWERS OF THE VILLAGES OF AL-MAKHAḌ AND AL‘ISHSHĀN AND RAIDA FORTRESS

Introduction

This chapter describes three duct defensive towers built in different contexts. The first tower is in the defended village of al-MakhaḌ in the south section of the highlands. The second tower is outside the compact village of Āl‘Ishshān in the central section of the highlands. The third tower is a prototype of the defensive towers of Raida fortress in the interior section of the lowlands at the foot of the escarpment. The emphasis of this chapter is on the tower of al-MakhaḌ; the other towers are only described briefly.

The village of al-MakhaḌ

The village (figure 1) , mentioned by Philby (1976, 164) in his travels across the region, is located in the extreme southern tip of zone A of the highlands, on the western base of the mountain known as Kawtharān al-Janūbi . It is a short distance from the escarpment beside a perennial water channel called after the village Wādī al-MakhaḌ.

The village is surrounded by man-made fields of different forms and sizes. On the eastern side, the terraces are curvilinear and decrease in size as they go up. The fields are demarcated by stone walls which also protect the fields from the erosion

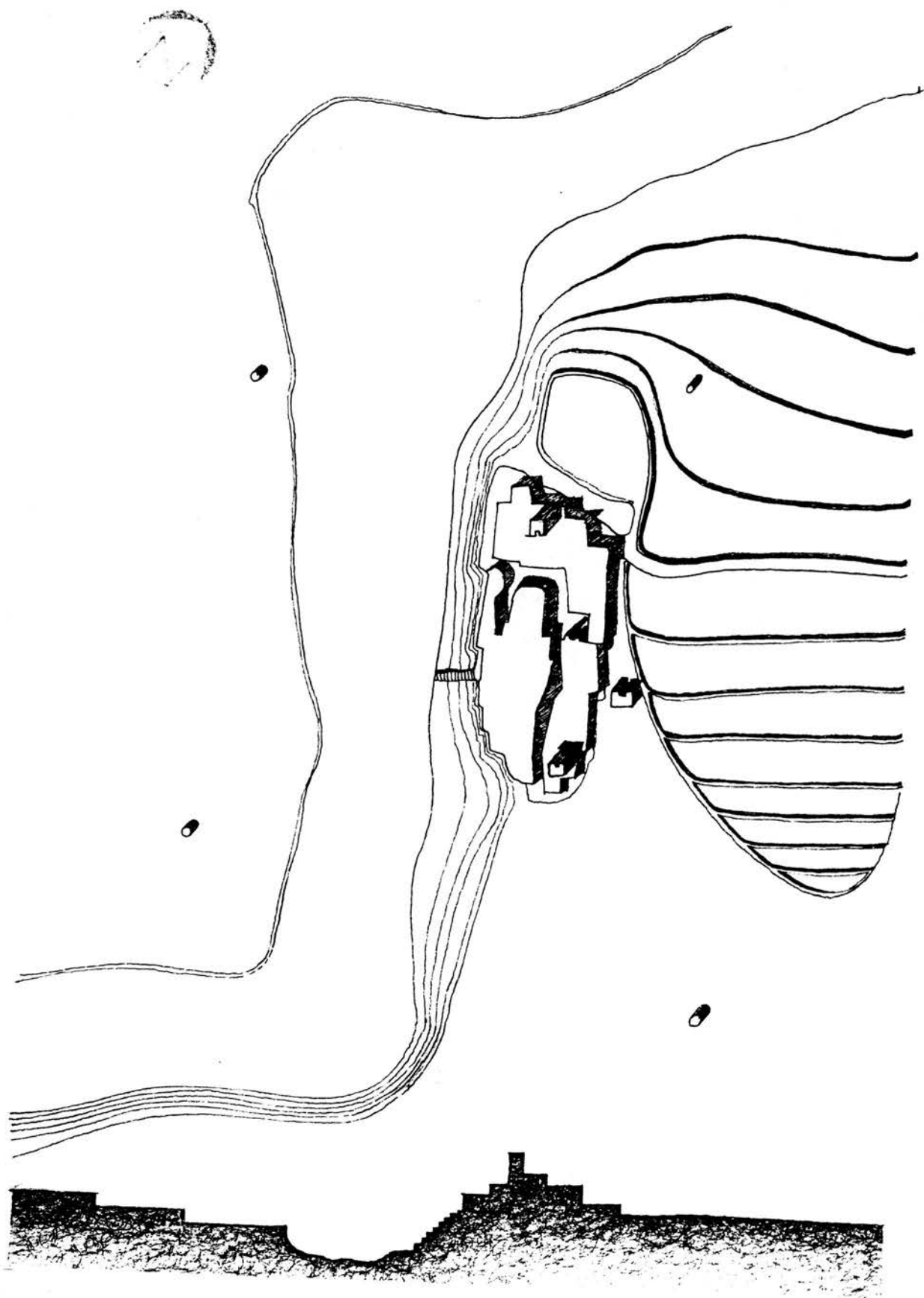


Figure 7.1.

The village of al-Makhaḍ, (top) site plan, (bottom) site section

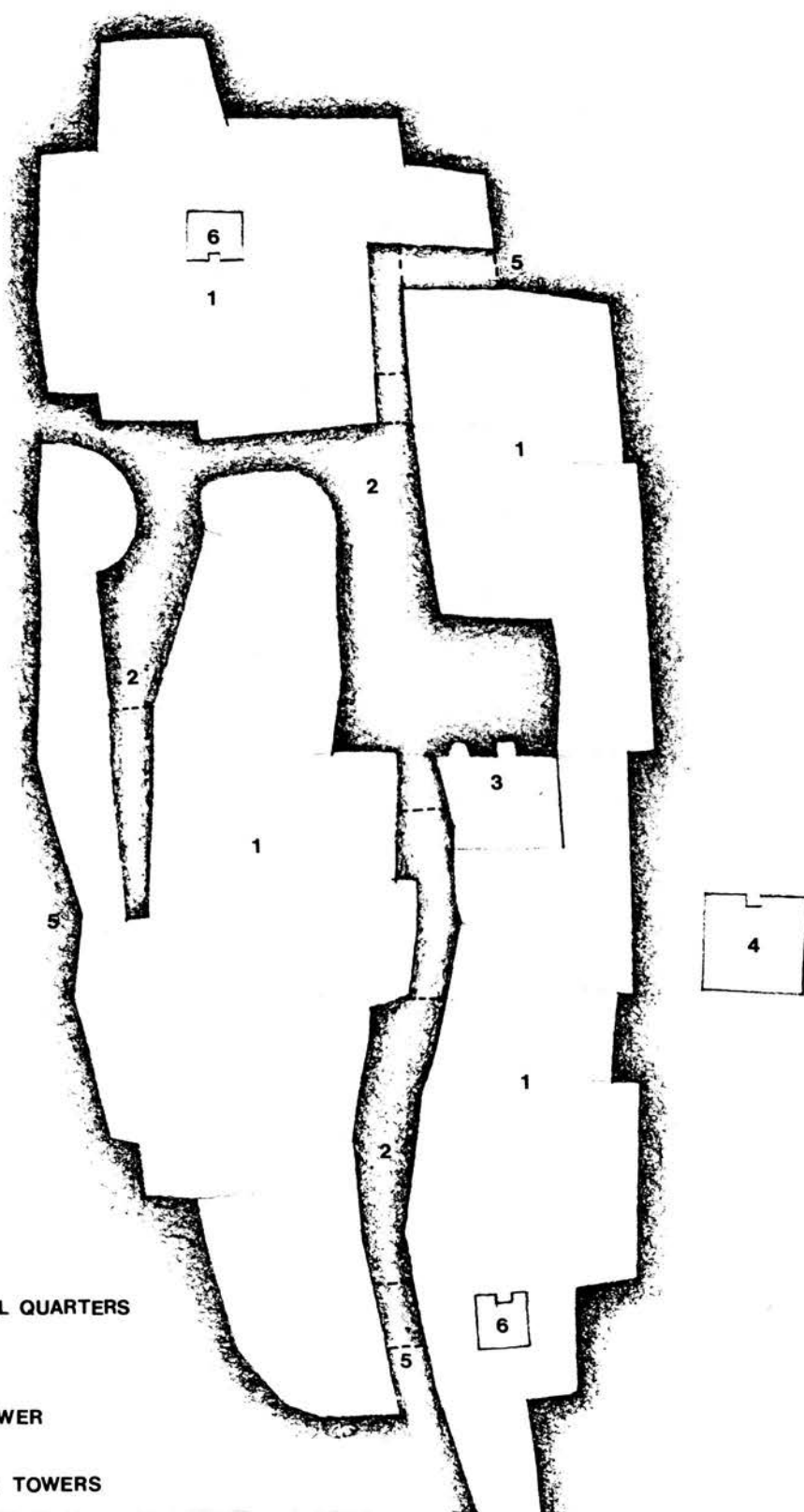


LEGENDS

- 1 THE RESIDENTIAL QUARTERS
- 2 THE STREET
- 3 THE MOSQUE
- 4 THE GPAIN TOWER
- 5 THE GATES
- 6 THE DEFENSIVE TOWERS



Figure 7.2
The village layout (plan) , adopted from Scan Plan team.



caused by heavy downpours. To the north and west sides the fields are larger, rectangular and irregular and they maintain a gentle slope.

The main features of the village

The village (figure 2) is built of compact two- and three-storey stone houses forming a continuous facade . The village extends horizontally along the north-south axis, thus maximising the gains from solar radiation. The compact form of the village houses reduces the risks that cause structural damage, and which would also pose a threat to the defensive purpose of the village. Through the middle of this compact system is a street, which runs along the main axis of the village, and terminates in four gates. In the centre, along the street, is the mosque, and a public gathering place (*al-baṣṭa*). The village is occupied during harvest time in spring and summer. But in winter, the gates of the village are locked and the village is partially deserted.

The topography of the village site slopes gently northward and sharply westward. As the houses are juxtaposed together they correspond to this topography. This can be detected in a number of features : the main street inside the village (figure 3) changes elevations smoothly along the A-A axis, but it changes elevation sharply along the B-B axis. The roof line of the village houses (figure 4) acts similarly. It slopes smoothly along the main street but it is broken sharply along the axis B-B.

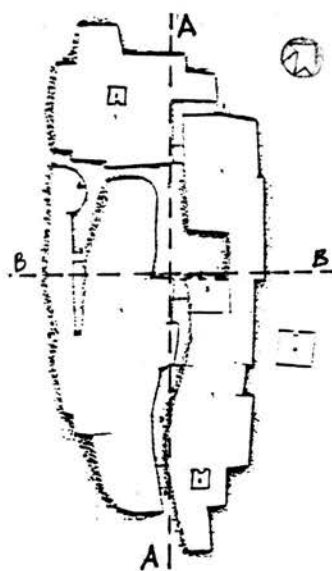
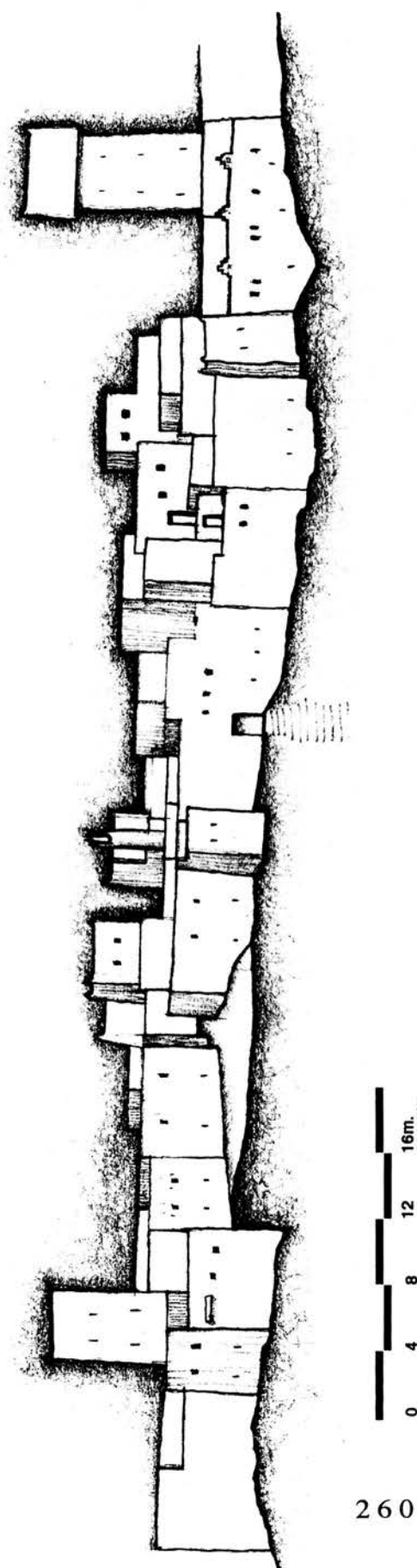


Figure 7.3 the two axes of the village

Another indication of the correspondence to the topography is revealed by the positioning of the windows, which also reflect the purpose of the rooms of the village houses. The living rooms are located one floor above the ground and are lighted by small windows which are often whitewashed. The ground floors are often used as grain rooms or to shelter the livestock. These rooms are lighted by narrow thin windows. The small number of windows above ground level indicates that a considerable portion of the village volume is below street level, and is approached through dark walkways, defined by the compact layout of the houses.

Old deserted houses, and some of the still in use houses are of low-rise type. Other houses, especially on the north side of the village, are more tower-type houses, built later. This is suggested by the finials on top of these houses, and by the use of concrete and brick ornament. Both features are of recent origin. Some of these houses are connected to the ground by fixed stone benches, similar to those of reception rooms.

Figure 7.4. The west side of the village



These benches are used as places of relaxation after heavy farming. Their location outside the village, overlooking the fields, is also another indication of the late arrival of these elements, a sign of the easing of security measures. In the past, when tribal feuding was rampant, providing such elements, outside the village was unthinkable. On the north-western side of the village is a threshing yard (*jarīn*) and a room (*saqīfa*) to store threshing and other agrarian equipment.

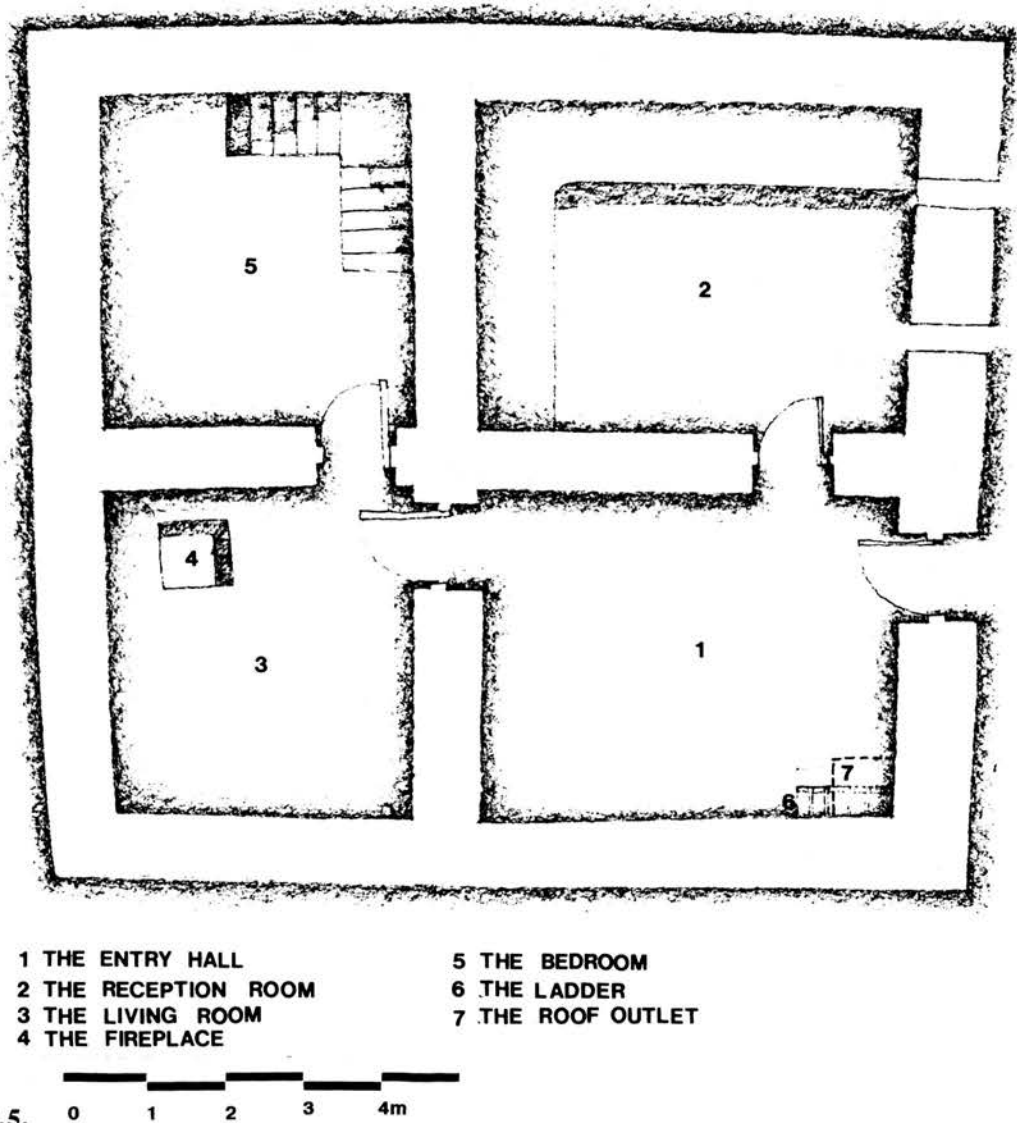


Figure 7.5. Plan of a typical house in the village.

A typical house of the village, like the one illustrated in figure 5, has one main

floor , a basement , and a roof terrace. The house is approached from the public yard, through the door which leads into the entry hall (1). To the right is the reception room (*al-majlis*) (2) with its fixed bench (*dabab*) of an L shape. In front of the main door is the living room (*al-mugahwa* , which means the place where coffee is drunk (3). This room, is the most occupied of all, and has a fireplace (*ṣalal*) (4). Beside this room is another room used for sleeping (5). This floor is connected to the underground area through the staircase which leads into the kitchen, the lavatory and the underground pedestrian network. The latter consists of many covered passages often linking areas largely inaccessible to each other above ground. Just to the left side of the main entrance is a fixed ladder (6) , which connects this floor to the rooftop (7). In peace-time, the rooftops are used as gathering place and as threshing floors. In times of war they are used as defensive platforms.

The street (*al-sabīl*)

The village is divided along the A-A axis by a main thoroughfare, terminating in the four gates of the village. It is defined by the compact layout of the houses. Along the street open the doors of the houses and of the mosque. In the south part of the village the street is open to the sky, but in the north part it is partially covered to allow the houses to be joined on the upper floors. The street is wide around the public compound which is defined by the mosque and by the adjacent houses. Around the corner of the compound , the street proceeds northwards and southwards, where it changes elevation and is intermittently covered until it terminates in the gates. The walls, and the floors of the houses adjacent to the street, are whitewashed, providing a faint light for the dark and shaded walkways which, in recent times, have been provided with artificial lights.

Along the street the doors of the houses (Fig. 6) open unexpectedly, in succession. These doors are not perpendicular to the street. They are recessed and tilted, so that, when they are opened, they do not reveal the interiors of the houses. This is a privacy measure which is an essential feature of village architecture across the highlands.

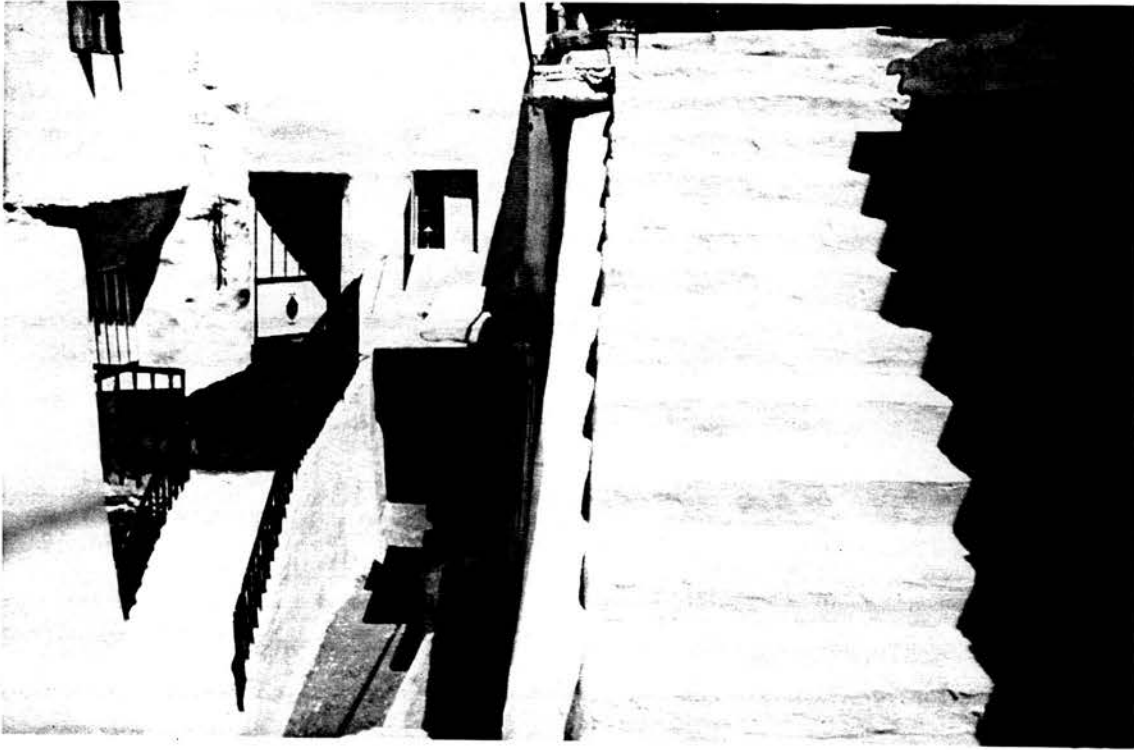


Figure 7.6.

A view of the street showing the shaded walkways, the tilted entry doors, the stairs to the roof, the transition spaces, the carpeting and whitewashing of the houses and the street.

The transition from the street to the houses is made in different ways. The living quarters of the houses are raised up a few steps, above the street level, as a means of defining them. Some houses are recessed and raised few steps, to provide a

semi-public space, and to prepare for the private spaces inside. Whitewashing of walls, painting of front doors and handrails, and carpeting the area immediately adjoining the houses are also devices used for this purpose.

The large windows of the houses open into the street in contrast to the small windows in the outside walls of the village. The orientation of the windows towards the street is due to climatic reasons. But this is also a manifestation of the importance of the street as a social gathering place. The street is the centre of activity for all the villagers. Providing large windows is a sign of the intimate relationship between the houses and the street. People, especially the women inside the houses, observe each other through these large windows, exchange items, and hold long discussions. Windows that open inside are decorated by stones of quartz or by carving with saw-tooth motifs on the lintels of windows; and the windows opening outwards are free of decoration.

Owing to the compactness of the houses, the left-out spaces do not exist in the layout of the village. This led to using rooftops as another area for circulation. Most staircases alongside the street lead to the rooftops. The southern tower, as we shall see shortly, is approached through a door which opens onto the roof of the adjacent house.

A subway circulation network links the houses together. It is efficient in times of war, allowing the people of the village to escape and hide. The network extends to the houses, the roof outlets, the street and the gates of the village.

A wooden lintel of one of the doorways inside the village, in the public compound (figure 7) carries marks of sword cuts which represent the people of the village who died in battle defending the village. Each cut represents one martyr. This wooden panel is the war memorial of the village.

The village is provided with a well inside. In war-times, when access to the water channel outside the village was denied, water was pulled up from the well and poured down into an artificial channel (*kuḍāma*) that runs along the street, and terminates beside the mosque in the public compound. This was designed to enable the village to sustain shortages of water when the village was under siege by enemies.



Figure 7.7.

The sword cuts and the war memorial of the village

A brief description of the village is given by the Scan Plan team (1982, 23) :

"The exterior of the village forms a solid wall rising up high from the surrounding land. A few openings in the wall-formerly provided with blank doors-give access to a network of narrow alleys, tunnelling through the tightly built cluster of buildings. Entrances to premises are often concealed in the tunnels. There are small open spaces in front of the mosque and the two qasabas rising above the main mass of buildings. The impression is sinister and hostile and bears witness to a period when unrest and warfare constituted a constant need for defence.

The mosque

The village mosque is incorporated into the fabric of the village in a pivotal location in the centre of the village bordering the main compound. This is to insure that

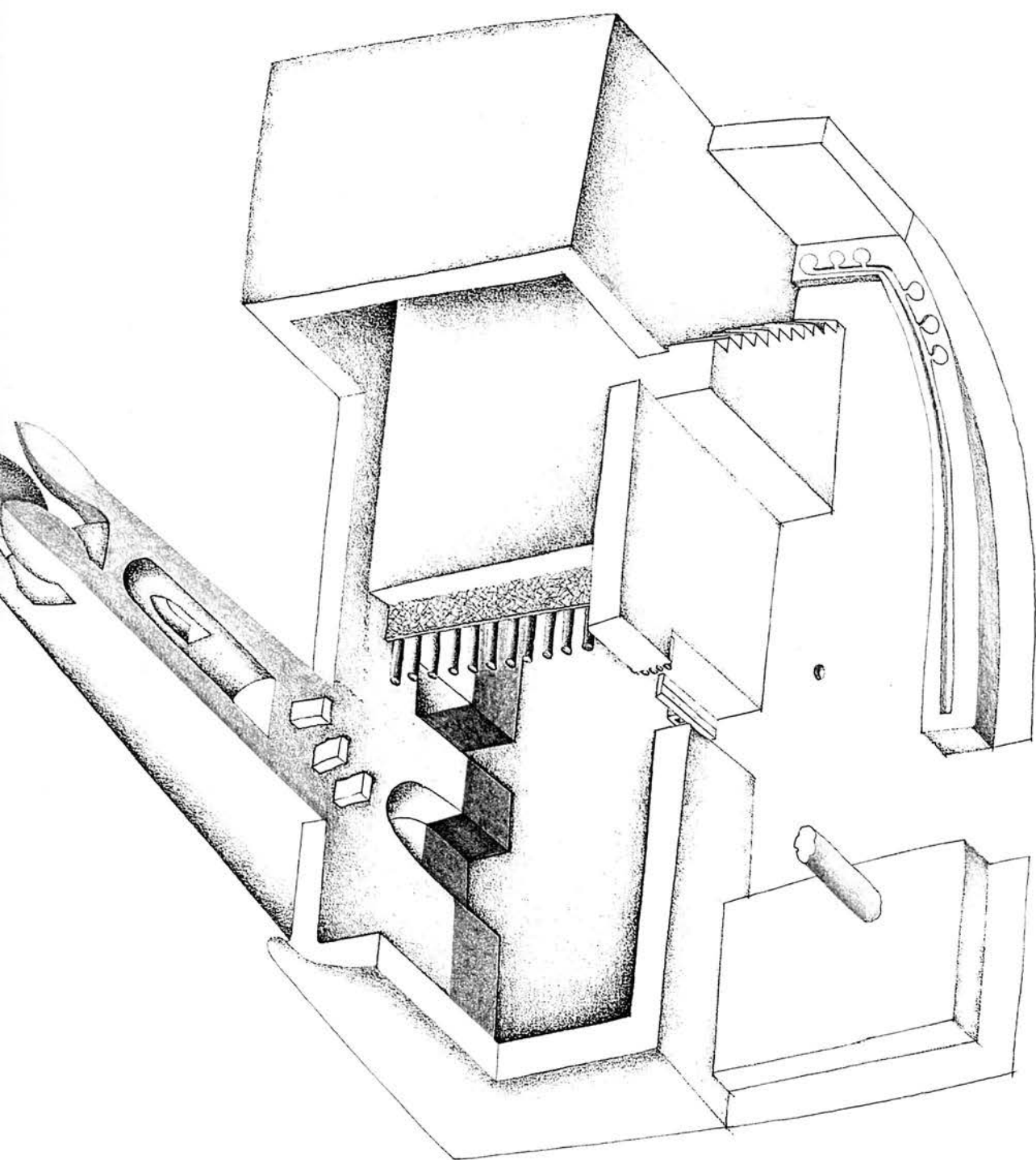


Figure 7.8.
The village mosque.



those who pray travel equal distances to the mosque. It is also a genuine indication of the insecurity that has, until recently typified the lives of the village residents, who could not guarantee their own safety while walking to the mosque, had it been built outside the village. Incorporating the mosque inside the village and making it of low height make it unrecognisable. Only by the minaret is it recognised.

Like other mosques across the highlands (King, 1986,82) the mosque of the village (figure 8) is a low-rise structure, and is divided into two halves: the prayer room and the courtyard. The prayer room is defined by thick stone walls and the roof which is carried by main and secondary wood beams without the need for supporting stone or wood columns or buttresses. Like other mosques of the highlands, the walls of the prayer room are free of decoration or Islamic inscriptions. The lower parts of the walls are painted green and the upper parts are whitewashed. The front wall of the room is carved at the centre to accommodate the *miḥrāb* which faces the only entry door to the room.

The courtyard contains an ablution channel which runs along the exterior wall of the mosque, and a shaded platform supported by a wood column. A staircase leads to the rooftop of the mosque, where a portion of the flat roof is shaded. This is to provide protection against heavy rain and bright sunshine. It also enables people to watch the surroundings while performing their religious duties.

The surface of the courtyard is now finished in cement. But in the past it was finished by the cement-like material known as *al-qaḍāḍ*. The floor of the courtyard is punctuated by narrow round holes which drain the rain-water of the floor down to the water tank below the ground. The water is pulled up by skin canteens and ropes and is used for ablution. This is a common feature of mosque design across the highlands.

Unlike other mosques of the highlands, where the minaret- if provided- is built at one corner of the courtyard, the minaret of the mosque is incorporated into the front wall, near the niche of the *miḥrāb*, and is carried by a short-span arch. The lower part of the minaret below the roof line of the mosque is kept solid, but the upper part has been carved to accommodate a space for the *mu adhḍhin* . This space is approached by three stone steps projecting out of the wall, recalling the steps of watch towers. The minaret is crowned by three finials or crenellation, of which the central one is the largest. These finials are bulky and higher than their counterparts on residential towers. Their purpose is obscure, but they may originate from the military or decorative crenellation of early Islamic architecture. All these are uncommon features in other mosques of the highlands. The local account states that the mosque was built in 253 A.H. Discussion of this very early dating is beyond the scope of this chapter.

The granary

Another important structure of the village is the granary. Owing to disuse, the structure no longer preserves its original form, which presumably was that of a duct tower. The duct is still evident in the surviving part of the tower. The granary has been built outside the village, closer to the terraces on the north side. Presumably it belonged to all the residents of the village, with each family being given a room to store its grain. The participation of all the villagers in one granary is common practice throughout the highlands.

The granary was built beside the fields to facilitate carrying grain to the chambers. But there were two other reasons for this location. The structure would have been too large for the residents of the village to incorporate it easily within the small low-rise houses of the village. The large size of the granary would mean that it

necessarily occupied a large area of the village and would, therefore, reduce the area available for residential purposes. It is also too large to defend. Removing it to a location outside the village would have relieved the village residents from the task of defending such a massive building.

The granary was built not only by the hands of the villagers themselves but also with considerable help from the neighbouring villagers. The granary is, therefore, not fully owned by the residents of the village, but is also partially owned by residents of neighbouring villages. In the course of tribal warfare, people constantly used to make new allies and break with old ones. This means that the neighbouring villagers who had previously been allies, and had helped to build the granary, might one day become enemies, and would therefore be denied their share of grain by the residents of the village. These would not defend grain that belonged to their enemy, had the granary been built inside the village. Only structures fully owned by village residents are built inside the village. The partially owned granary must, therefore, be detached from the physical fabric of the village.

The evolution of the village

The residents of the village circulate a legend which describes the origin of the village. It speaks of a farmer living in the village of al-Badala, which is about ten kilometres north of the village of al-Makhaḍ. One day his she-camel came back at dusk and her stomach was full, and when the farmer saw her waste, he observed a fresh smell of plants, which suggests a fertile location as the source of this waste. At dawn the next day, he followed his camel closely on her way to her grazing ground, until she stopped at the location of the village. The man was pleased by the fertility of

the location, where water is always running and the vegetation is lush. He decided to dwell on the bank of the *wādī*, at the location of the existing village. This legend explains the fertility of the village location which must have generated the very existence of the village.

An elderly settler of the village once said, " My son, this village has been built on warfare" " *al-ḥirāba* "). The founders of this village belonged to a sub-tribe of 'Āsīr known as 'Ākam. But the territory on which the village was built had belonged to another sub-tribe of 'Āsīr known as Banī Mughaid . According to tribal laws, the new settlers of 'Ākam were seen as conquerors of the land, and soon have been forced to leave the site. But the newcomers could not resist the ever-running water and the lush vegetation, despite the numerous casualties inflicted on them. Therefore, they built their village, according to defensive measures, to protect themselves against constant attacks by the original owners of the territory, the Banī Mughaid. These measures were : the guard towers outside the village, the gates of the village, the roof outlets and the two defensive towers inside the village. These measures are described in detail below.

The guard towers and the communication system

The residents of the village speak of a defensive system that has ceased to exist but which was used formerly to defend the village. It comprises four round defensive towers, built in selected locations around the village. Each one of these was called *ḥāmya* , which means " the protector ". The *ḥāmya* is, therefore, a defensive and a watch tower . In each of these towers, whose remains can still be seen, were set defenders with their ammunition, rifles food and water to defend the village.

Transmitting messages and ammunition between the defenders in the towers is done by means of ropes driven by wooden wheels turned by hand. These ropes allow rifles, small bags of grain, sheets of news to be circulated. These objects are tied to the rope. The remnants of such system can still be seen today and are used to protect the fields from birds. In this system a rope made of palm leaves, overlooks the fields, at about two meters above the ground. The rope is interrupted at intervals by hanging objects that make a noise when the rope is pulled. When there is danger of some kind, a bird is coming for example, if the rope is pulled by the guard in his watch tower, thus causing the bird to fly away.

The gates

The village has four gates that terminate the main street and the underground pedestrian network inside the village. The gates are located on the four sides of the village. Each gate has a large door which is now broken. In time of war, the doors are locked and protected by at least one guard stationed with his rifle behind the door. In peace-time the gates are locked during the night and reopened at the dawn prayer the next morning.

The south gate is provided with a room above the gateway (*ghurfat al-ḥurāsa*, which means " the guarding room"). The room is provided with a large window that opens into the street and is used to drop stones on attackers or to shoot them with rifles. The other three gates are underneath the houses of the village. They are defended from the houses above them, the roofs or from behind their doors.

The roof outlets

The roofs of the village houses are provided with round and square apertures of approximately 2 ft. in diameter. Every house has more than one outlet (*ṭāya*). They are left open , thereby providing light and allowing smoke to escape from the houses. As the houses of the village are compacted to each other, so are the roofs. They become one floor which is interrupted by these outlets. The one-roof feature that typifies stone defended villages in the south section of the highlands is found in Philby's description of al-Sūda village (1976, 159) :

" The whole village had the appearance of being covered by a single flat roof pierced with numerous (quite narrow) skylights and divided into house-sections by low clay ridges about twelve or eighteen inches high."

The low clay ridges mentioned by Philby reflect the internal arrangements of the houses in that each ridge is an extension of a wall separating rooms. In time of war the single roof of the village becomes one single platform. The defenders of the village take advantage of the roof and attack invaders from above. They use these outlets as means of access to the village houses instead of doors, which are locked so that the elderly , women, and children stay safe inside. These apertures are approached inside the houses by using wood ladders.

A description of similar outlets in al-Suda village has also been given by Philby (1976, 159) :

"This served to let out the accumulated smoke in the rooms, and also afforded the inhabitants the means of visiting from house to house without going outside the village block. If one went a-visiting one knocked not on the door but on the skylight. The reason for this strange arrangement was obviously to be found in the state of insecurity which had marked these highlands till quite recent times, necessitating the barring and bolting of all outer doors at night to convert the village block into a self-contained fortress."

The village of al-Sūda described briefly in Chapter Four is ten kilometres north of al-Makhaḍ and is also occupied by ‘Āl Kam. Providing these outlets as means of circulation in both villages indicates their defensive nature which corresponds to a rampant social status of insecurity.

The tower of Āl Lāḥiq

The skyline of the village (Fig. 9) is dominated by two stone duct towers, one at each end of the village. The north tower is known after the family that built it (qasabat Āl Lāḥiq). The duct faces the street and the south tower. There are two types of openings in the tower. The first type -presumably windows- is larger than the other type, and is decorated with white quartz laid out in a carpet pattern. The other type - presumably loopholes- is narrower and is marked by bold white stones. The two types succeed each other in four courses of the tower.



Figure 7.9.

The village from the west.

According to the locals this tower is older than the south tower. It had been provided with a drum on top of the tower, intended to be struck in times of invasion. This is probably a remnant of ancient traditions in South Arabia and in Mesopotamia (al-Ḥarīrī, 1987, 44). The tower is in a state of collapse and the piles of stone rubble on its lower parts prevent further description.

The tower of Al Maṣṣūr

The other tower (Fig. 10) is called qasabat Āl Maṣṣūr, after the family to which the tower now belongs, and is located at the south end of the village. The duct of the tower faces the street, and the other tower on the north side of the village. The tower is engaged at ground level with the village houses. Observation indicates that the ground floor of the tower has no access to the houses attached to it. Entry to the tower is through the small entry door which opens into the roof of the adjacent house.

In local terms *qaṣabah* means a defensive tower, built to enable the residents of the village to defend their village and themselves against attackers from the Banī Muḡhaid of Āsīr. Providing a collective grain tower outside the village beside the fields excludes the possibility of using the tower under discussion as a grain tower (*raff*). Yet the inhospitable indoor environment of the tower, as we shall see below, indicates that the tower was never used as a tower-house.

The punctuation technique of decoration is applied to the walls of the tower in symmetrical fashion. The windows along the centre of the four walls of the tower are framed with a carpet pattern. This is balanced on both sides of every window by two rectangles of quartz laid out in chequerboard pattern and by two loopholes marked by a white quartz on both sides of every window.

The most notable feature of the tower is the veneered projection at the top. It is carried by four large wooden beams, one on every side. Another supporting wooden beam is located at the centre of the floor above the windows. The projection and the method of carrying it are unfamiliar features in the south section of the highlands.

In the north section of the highlands, where the projecting parapet tower is the dominant type, the top of the roof is carried over wood or stone beams projecting out of the parapet floor (figure 11) . In this tower it is the heavy use of the rooftop that is responsible for the unfamiliar technique. Using this technique means that it takes less time to build the walls protecting the top floor than with the technique used in building parapet towers in the north section of the

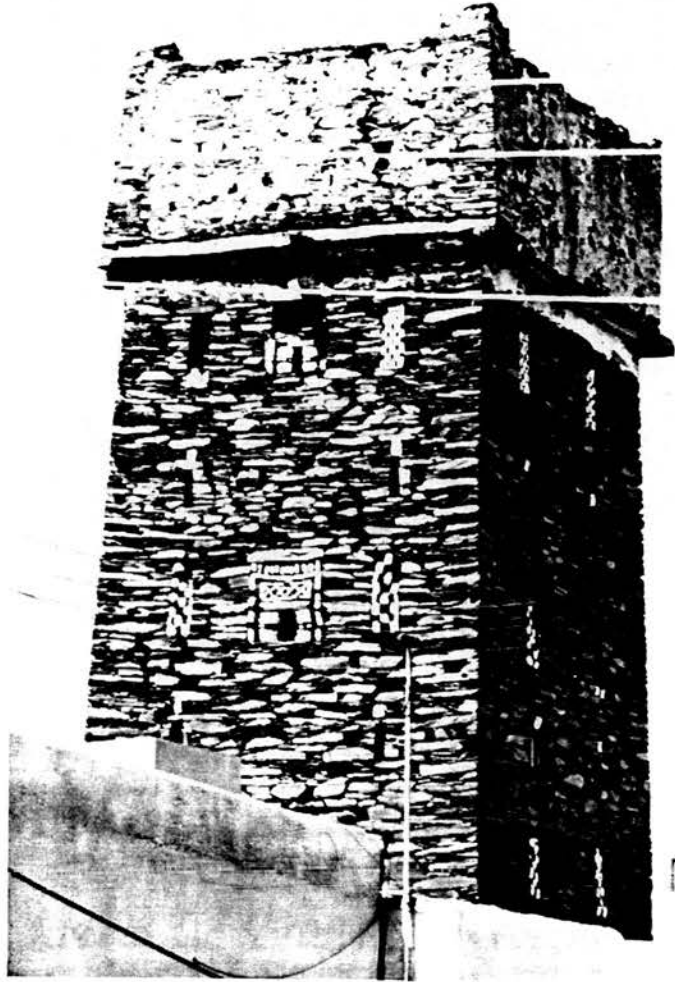


Figure 7.10. The tower of Al Manşūr.

highlands. In a situation of constant warfare the time is precious and the safety of the defenders requires fast building and repairs process which was achieved by using this technique.

The top floor of the tower is the most important. Being the highest floor, it is the most inaccessible, which costs attackers much effort and precious time in their attempts to storm the tower. It also provides the maximum area of surveillance and enables defenders to target and shoot advancing attackers successfully. Defenders retreat to this floor and defend themselves and the tower from the top. This floor thus becomes the most crowded floor of the tower. Therefore the projection provides extra space, allowing for a larger number of defenders and easy manoeuvring.

Veneering the walls of the projection indicates that the top floor has been used extensively. Its frequently repaired state shows that

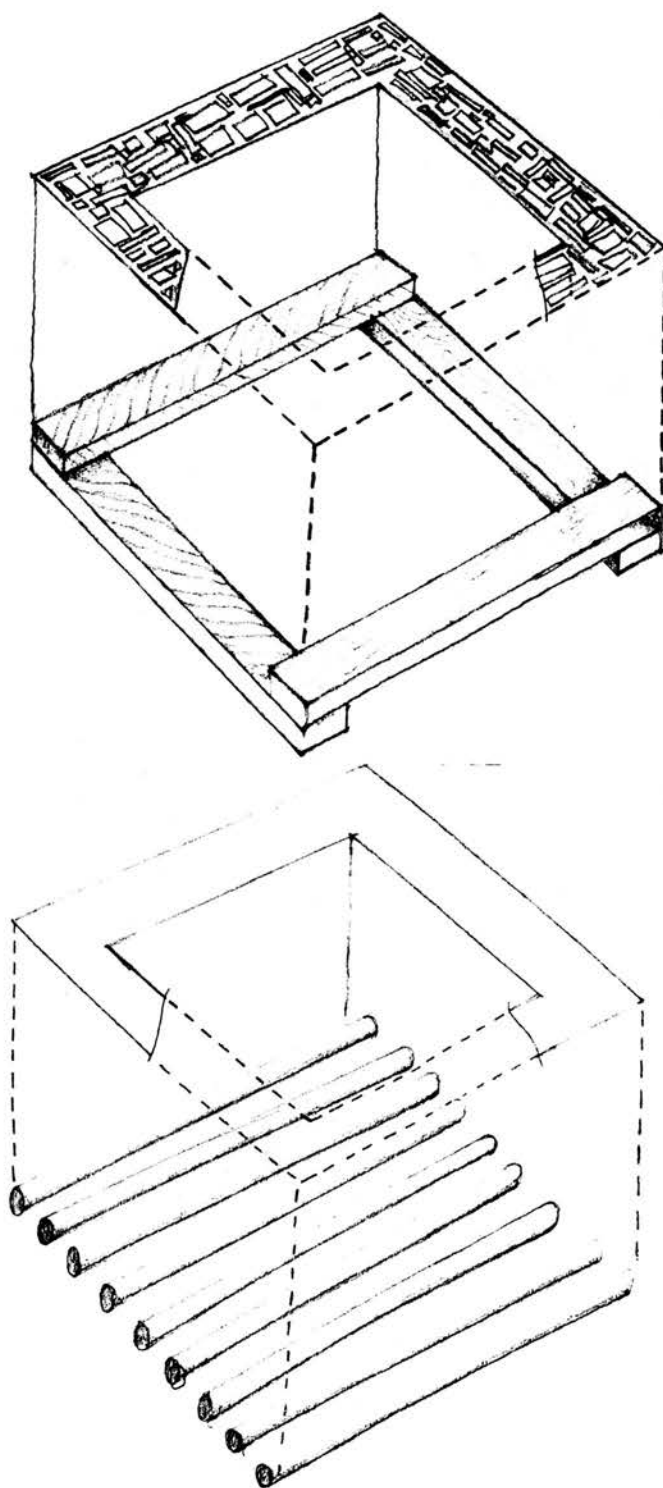


Figure 7.11. (top) the construction technique of the projection of the tower, (bottom) the construction technique of the towers in the north section of the highlands.

its make up also supported by the locals. Therefore it required constant protection against rain and humidity . Exposed mortar joints connecting stone rubble disintegrate rapidly in damp weather, and cause the wall to fall down. Veneering seals stone rubble and provides protection against rifle fire from the ground by attackers. It reduces the risk to defenders as it conceals the cavities of stone rubble and prevents the shots from penetrating the wall.

The floor is roofless which indicates that it is used for short term purposes only. Local warfare involves fast raids launched by a number of tribesmen. When the risk is imminent the defenders retreat to the top floor for defence. When the risk is diminished they descend to the lower floors and finally leave the tower.

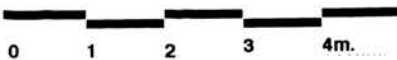
The interior spaces of the tower

Inside, the tower (figure 12) is divided into five floors including the projection on top of the tower. Each floor (figure 13) is one clear space free of objects and furniture. The floors are carried by main and secondary wood beams. The walls of the tower are punctuated by two types of openings. The first type comprises loopholes placed evenly closer to the floors, two of them at the corners of each floor. The other type of openings is more refined. These are located at the centre of the room, four to every side. A typical example opens wide on the interior but it narrows outward in a perpendicular recess. None of these openings have wooden shutters, therefore they are always open. The purpose of these openings, according to the local people, is to provide for light the dark spaces inside the tower.

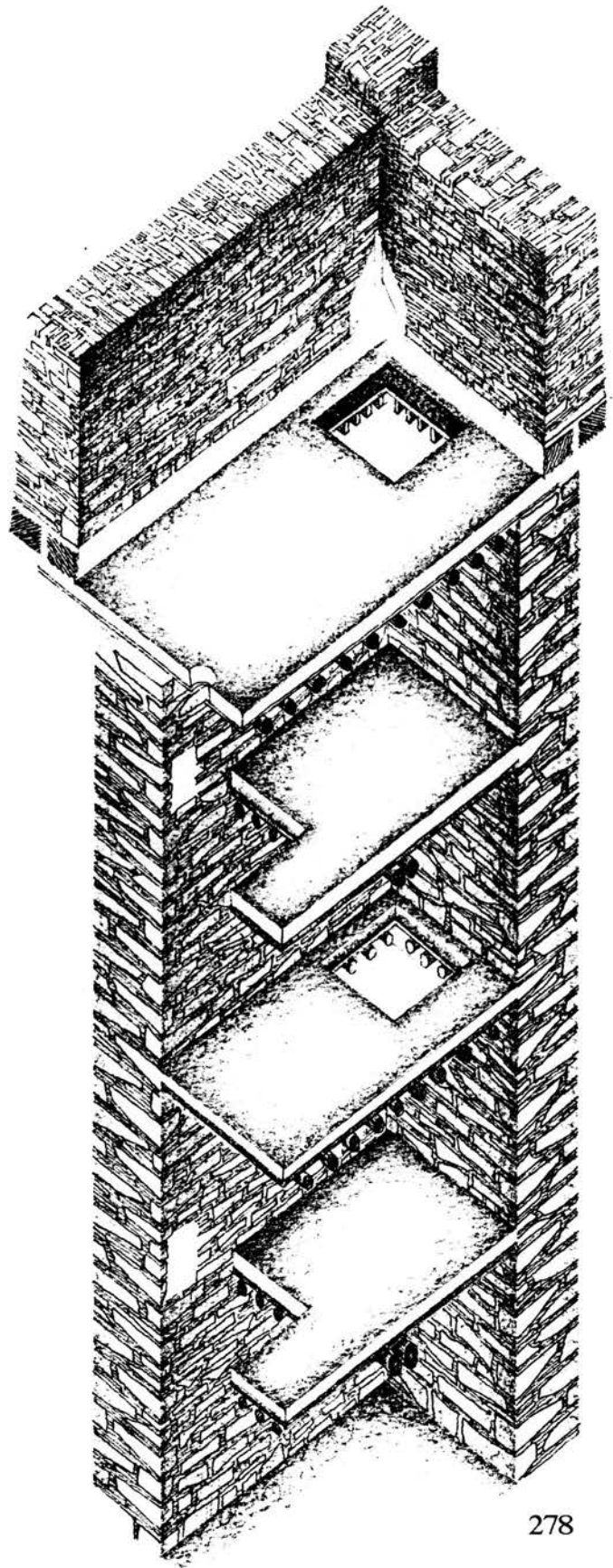
The rooms of the tower are designed to provide shelter for the population of the village seeking refuge inside the tower. These are mainly the senior male members of the village capable of carrying rifles; these are the constant users of the tower. The rooms are used for short periods. There is no indication that these rooms have been used for long term residence. The walls are plain, with no cladding, plastering, nor painting. The floors, too, are unfinished, scrubbed or carpeted.

Figure 7.12

Isometric view of the tower

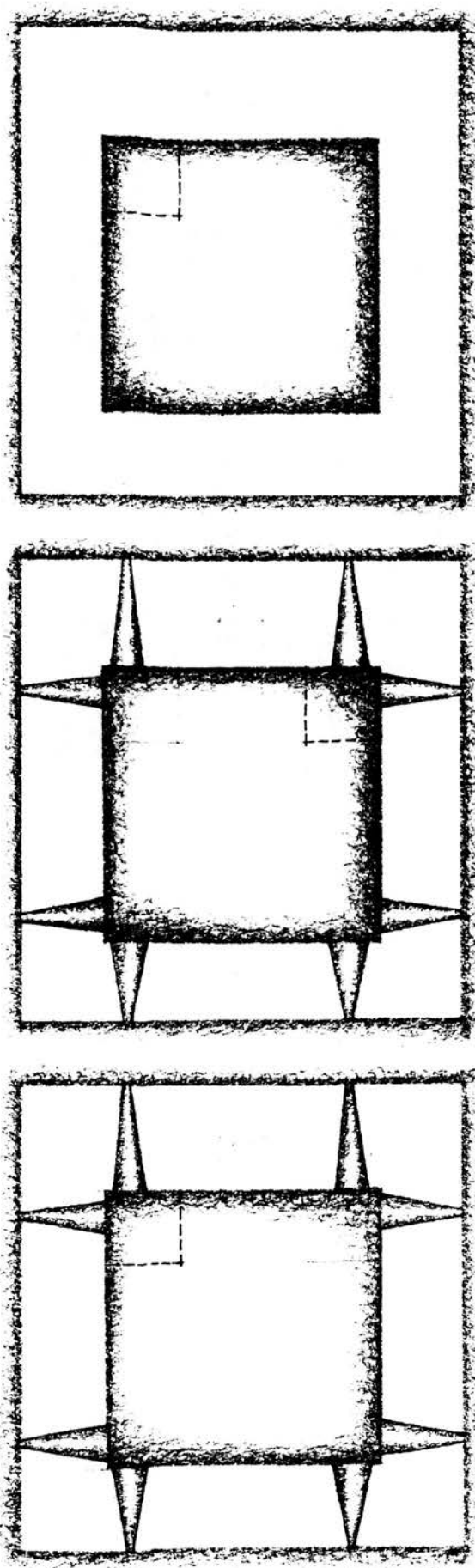
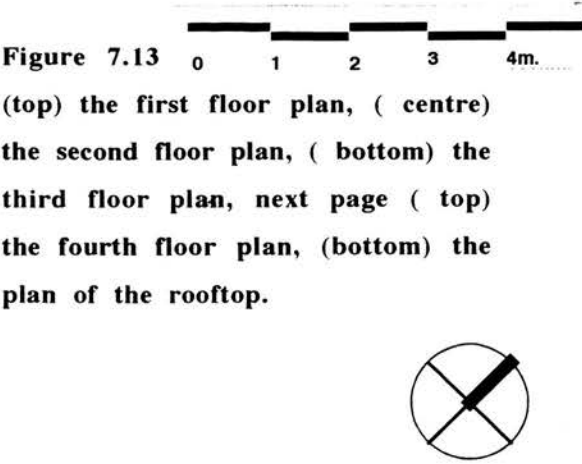


The door leading into the tower is so small that one has to bow down to be able to

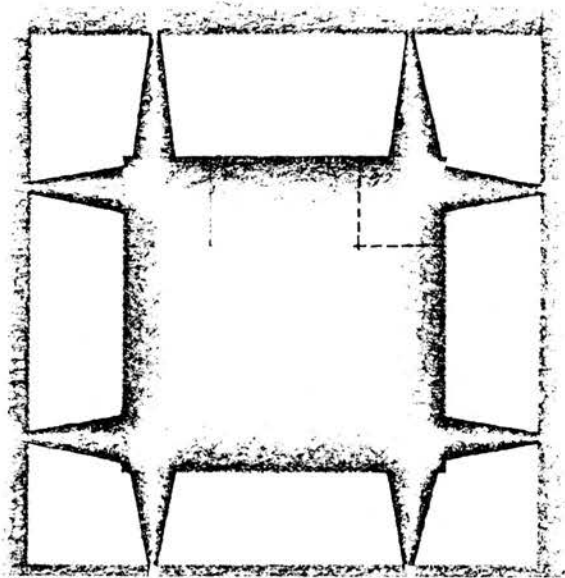


get through. This is a defensive measure and, as stated by Abū ‘Abs (1985, 23), smaller doors are hard to break. Like most doors of towers in the region, it is made of thick wood panels jointed by steel joists. The door is locked by sliding a thick wood panel behind the door into the post of the door. The door is opened from the outside by a large metal key.

The tower has no staircase. Climbing the tower is achieved by means of a one-meter aperture provided at the south and north corners of the floors. According to the people of the village, the principal way of climbing the tower (figure 14) is by using a rope tied to the roof of the tower ; this extends downwards. Holding the rope tightly



by two hands, people insert their feet into the cavities of the stone wall. When they reach the top floor they pull the rope up to deprive attackers of the chance to climb up. This was the method of climbing the tower used during the field trip for this thesis. Ladders, if provided, are used in a similar fashion.



The reason for removing the aperture from one corner to another in succeeding floors can only be guessed at. They are perhaps removed as a tactic to deceive attackers intending to invade the tower. Searching for an outlet leading upwards cost s them precious time and they become vulnerable to the defenders' stone missiles raining from above . Had the outlets been placed above each other, access to the top would have been easier, more direct, and less time consuming.

This can be also explained in structural terms. Wooden ladders used for climbing similar towers need to be firmly grounded to enable people to go up. This possibility would be denied them had the apertures been

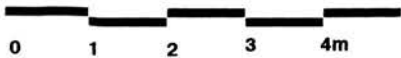
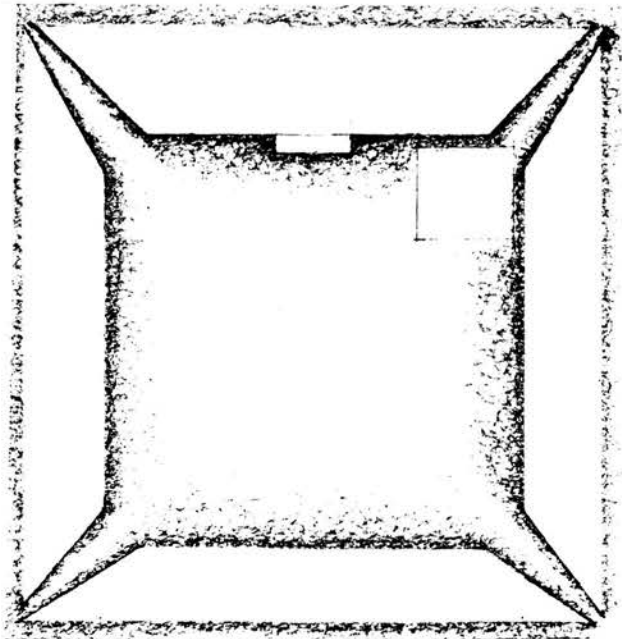


Figure 7.13.

(top) the fourth floor plan,
(bottom) the plan of the rooftop.



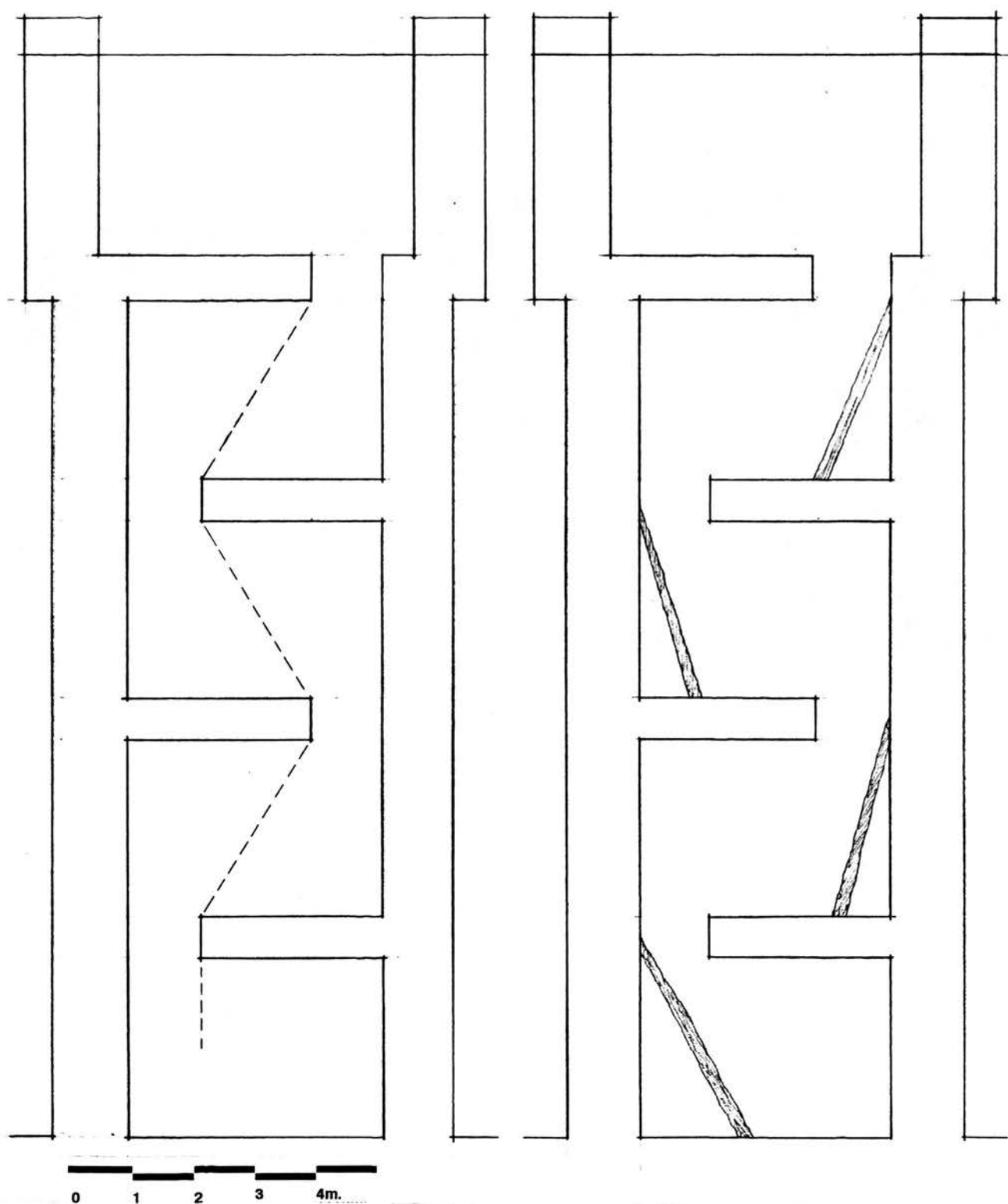


Figure 7.14.

Climbing the tower by the ropes (left) and by ladders (right)

placed at the centre of the floor. The immediate area surrounding the aperture is too weak to sustain the loads of the climbers with their ladders. Therefore the aperture is pulled to the corner where the floor is solid enough to sustain its load and that of the climbers.

But this feature is probably itself driven by safety requirements. The cavities of the stone walls do not provide enough support for climbers, therefore, the chance of falling or slipping is great. Had these apertures been placed above each other they would have created a void or a duct along the height of the tower. This would risk the lives of the defenders. If they slip or miss cavities while climbing they would fall down to the ground floor. Pulling the aperture to the other side of the floor reduces substantially the risk of physical damage to defenders.

The walls of the projection are punctuated inside by loopholes. A cavity is dug into the wall and is punctuated by three or four loopholes, targeted in different directions of the surrounding area. On each side of the floor is a small opening to target attackers coming from the immediate area beside the tower. The duct running at the centre of the main facade of the tower, ending up in the roof, is used as a runnel for stone missiles to protect the entry door of the tower.

The performance of a similar tower (figure 15) in the north section of the highlands is recorded by Dostal (1983, 99):

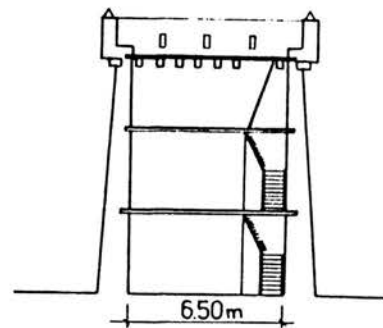


Figure 7.15.

A parapet defensive tower in the northern section of the highlands, after Dostal.

" The fundamental feature of spatial functions consists in the fact that defence towers were only occupied in times of war and otherwise stood empty. In the case of war , the livestock was driven to the ground floor room ,whenever the tower was sufficiently close to the dwelling house and time allowed. The top story served as a refuge for the women and children. If the enemy succeeded in penetrating the ground floor by way of the single, narrow entrance door , the defenders retreated to the next floor above. Even then , the rest of the building could be held for a certain period, since access could not easily be gained to the upper floors: either the carved step ladders were hauled up completely, or the stone steps were defended from above . In principle, a single able-bodied man was capable of doing this. The defenders on the roof could take cover behind the parapet which thus served as a rampart. "

In this statement aspects similar to those of al-Makhaḍ tower can be recognised. Both towers have projecting parapets at the top punctuated by loopholes. They also have clear spaces inside. Both towers are provided with an aperture on their floors for vertical circulation. In both towers climbers use ropes or ladders.

But they are also different in some respects. The tower described here is displaced in the landscape, while the tower of al-Makhaḍ is inside the village. The present tower is larger in plan than al-Makhaḍ tower. Owing to its larger size it is provided with a support wall at the middle, while the spaces of al-Makhaḍ tower are single spaces. The tower described here accommodates the livestock beside defenders, while the tower of al-Makhaḍ is too small to do so. The village of al-Makhaḍ being protected by guard towers, the continuous wall, and gates, is safe enough to provide protection for the village population.

The village of al-Makhaḍ as a whole reflects ancient traditions of village buildings across the highlands of ‘Asīr as confirmed by Scan Plan team(1982, 23) :

"The fabric of the village , the building techniques and the characteristic architectural features such as the mosque, the qasabas and the decoration of prominent buildings clearly indicate that the village of al-Makhaḍ is a representative of very old traditions of agricultural settlement in Abha Metropolitan Area."

The defensive tower of Āl‘Ishshān village

The village

The village of Āl‘Ishshān in the central section of the highlands (figure 16) is built of compact two-storey stone houses. The village is surrounded on four sides by fields . Some houses of the village are whitewashed; others are plain . The village (figure 17) has a cubic configuration and is occupied by the nuclear family of al-‘Ishshān , a sub-clan of Ballasmir, which belongs to the tribe of Rijāl al-Ḥajr.

The old tower

There are two towers in the village; one inside the village and the other outside it . The tower inside the village is older and smaller than the one outside the village. It is divided into compartments approached by fixed wood steps projecting out of the wall, similar to those of al-‘Ārāba village. Although the tower is a granary, it is also used as a defensive tower.

But the location of the tower inside the village proved to be unsatisfactory. The defence of the village and its vicinity from that location is ineffective, owing to two reasons. The tower can't protect the entry points to the village , especially from the east and the west. It is also risky to defend the village from the tower. Being a target for attackers, there is a great risk to the lives of women, children and the elderly. Therefore, the residents of the village have decided to build a larger tower in a better location. Eventually the opposite hill , facing the village from the south, was selected as the site for the new tower . They call it after the village.

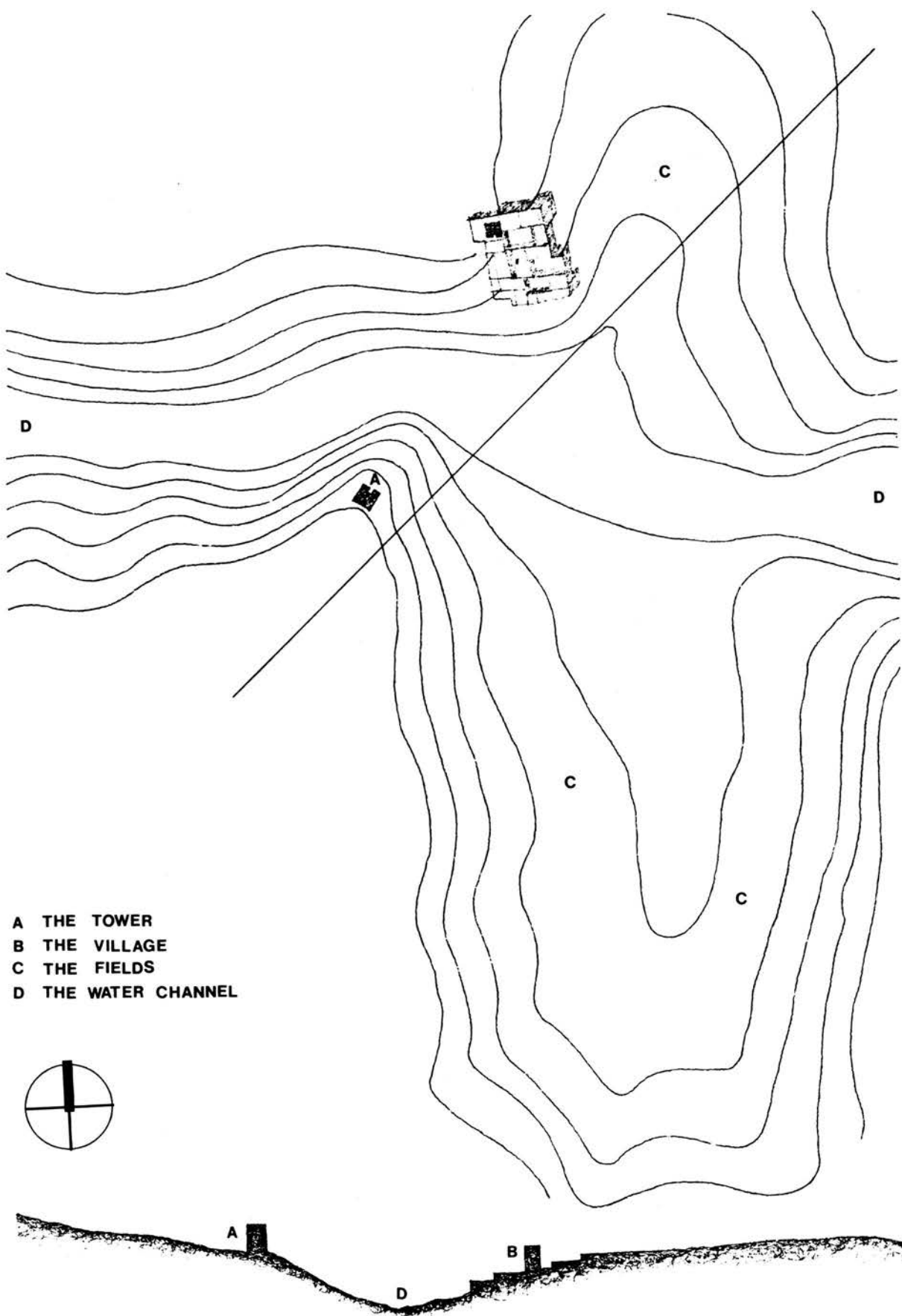
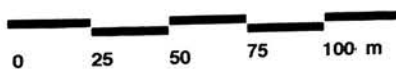


Figure 7.16.

The village of Āl ʿIshshān (top) site plan, (bottom) section.



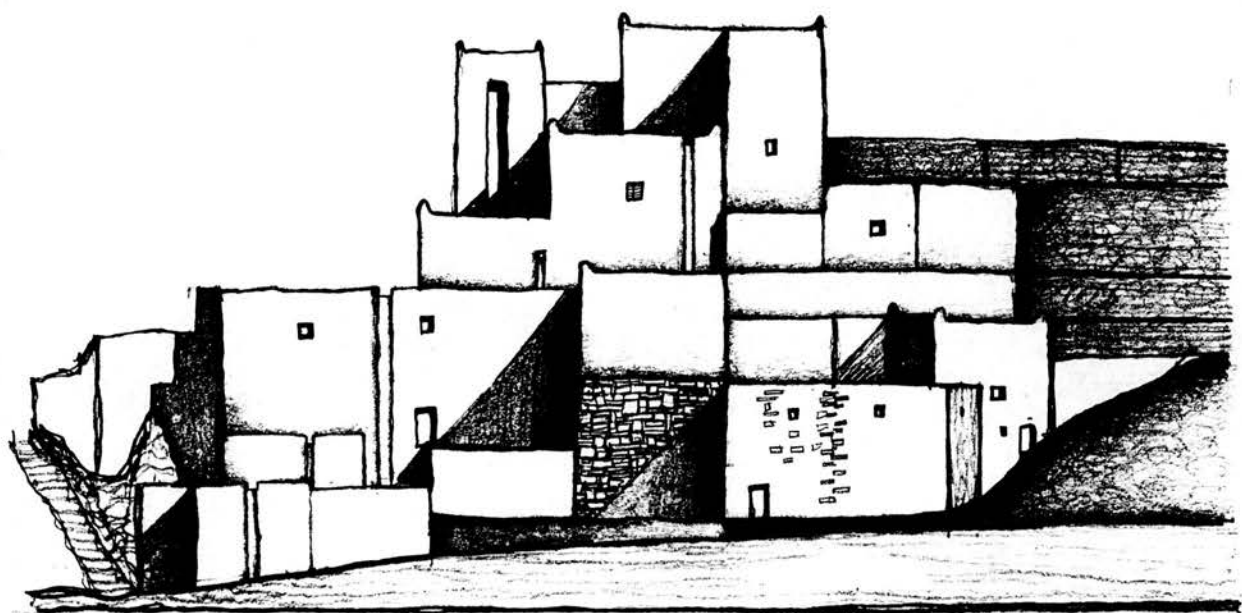


Figure 7.17.

0 3 6 9 12 15m.

The south elevation of the village.

The defensive tower of the village

The location of the new tower proved to be more effective. From this location, the defenders occupying the tower (A) watch and protect the village (B) to the north, the fields (C) on both sides from the tower, and the entry points (D) to the village. Only from this location can all these areas be defended. The duct faces the Northeast. The tower faces the village to the Northeast as revealed by its duct.

The tower (figure 18) is square in plan, measuring 6.4 m. per side. It has three floors. The ground floor is divided into four parts. One part is devoted to the staircase. The other three parts have been used lately to store grain. But in the past

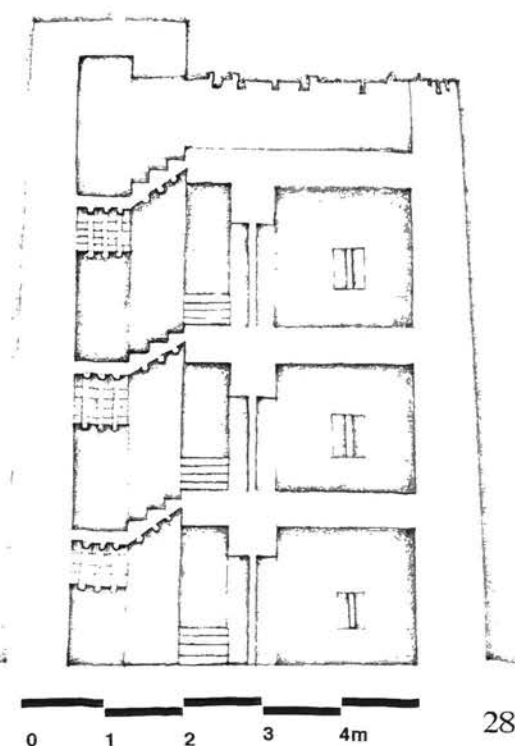
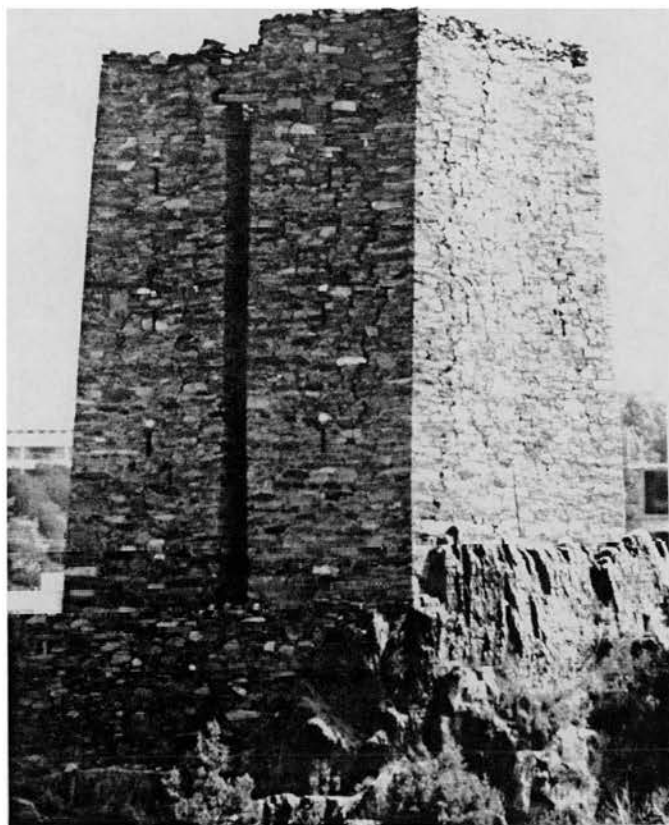
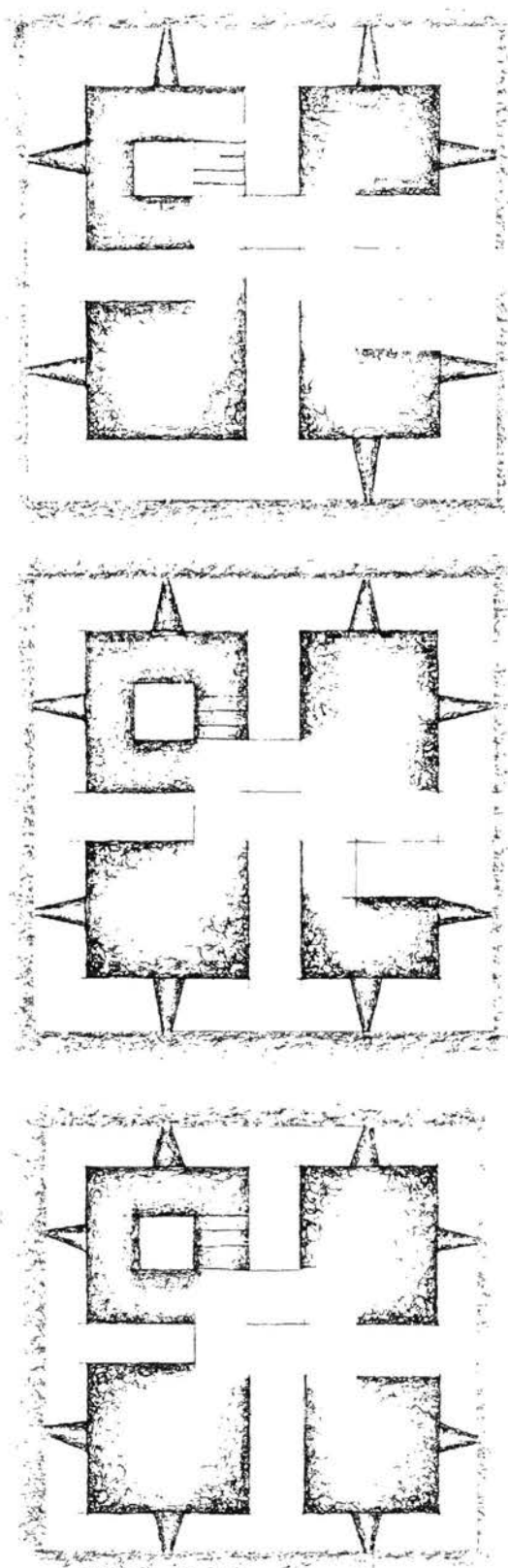


Figure 7.18.

(top right)the tower from the Northwest side, (top left) the first floor plan,(centre) the second floor plan, (bottom) the third floor plan, (bottom right) a section.

they have been used as defensive rooms. The second and the third floors are similar in plan and in their use. Both of the two floors have two rooms, one big and the other small. Both rooms are used as temporary stopovers for the defenders and are provided with loopholes, which are marked, outside, by white stones of quartz. They are also provided with pegs from which to hang rifles. The big room is used also as a gathering place for defenders to use when danger has passed. It is in this room that men sit, relax and take food, while still being involved in their duties as defenders of the village.

The tower is unfinished at the top, so that loose stones are used as missiles, and dropped on attackers. This is a common feature of stone towers across the highlands. The wall of the roof is interrupted irregularly by irregular loopholes in all directions. It is on this floor that the duct ends, so that it can be used as a runnel for stone missiles to be dropped on intruders. It is also on this floor that the defenders cook their food.

The construction aspects of the tower

The tower is built according to an old tradition. It is divided into four parts, and each part is built by a master builder (*al-bānī*) and his assistants (*al-ṣubayān*). The four builders compete in the quality of their work and in the time of construction. Each one tries to be the best and the fastest. This tradition is responsible for the thin line that appears in the four facades of the tower. These lines can be seen in many duct towers across the central and south section of the highlands. This indicates that duct towers are built by groups of builders and their assistants.

After the tower has been finished it is crowned, at the four corners, by large white quartz stones. The reason behind this is to express that the tower has been built

successfully and that the duty of the villagers has been fulfilled. This tradition is intended to free the nuclear family of Āl⁶ Ishshān from dishonour they would suffer in the eyes of the other villagers if the tower had not been built. In other words, these stones are signs of accomplishment.

Juniper wood (*ʿarʿar*) is employed heavily in this tower; pieces of wood are inserted (figure 19) into the rubble of the stone walls. This technique is found in the stone retaining walls of the fields all across the highlands. It is also found in the stone rubble houses of the villages of al-Makhaḍ and al-Sūda. The walls of the upper floor of the defensive tower of al-Makhaḍ are also filled with pieces of wood. But in the tower of Āl⁶ Ishshān pieces of wood are cut, trimmed and placed at equal intervals spanning all sides of the rooms. However, these pieces are concealed behind a thin layer of *qaḍaḍ*. The main and secondary beams (known locally as *furūd* and *jarīd* respectively) used in roof and floor construction are more refined, and of better craftsmanship.

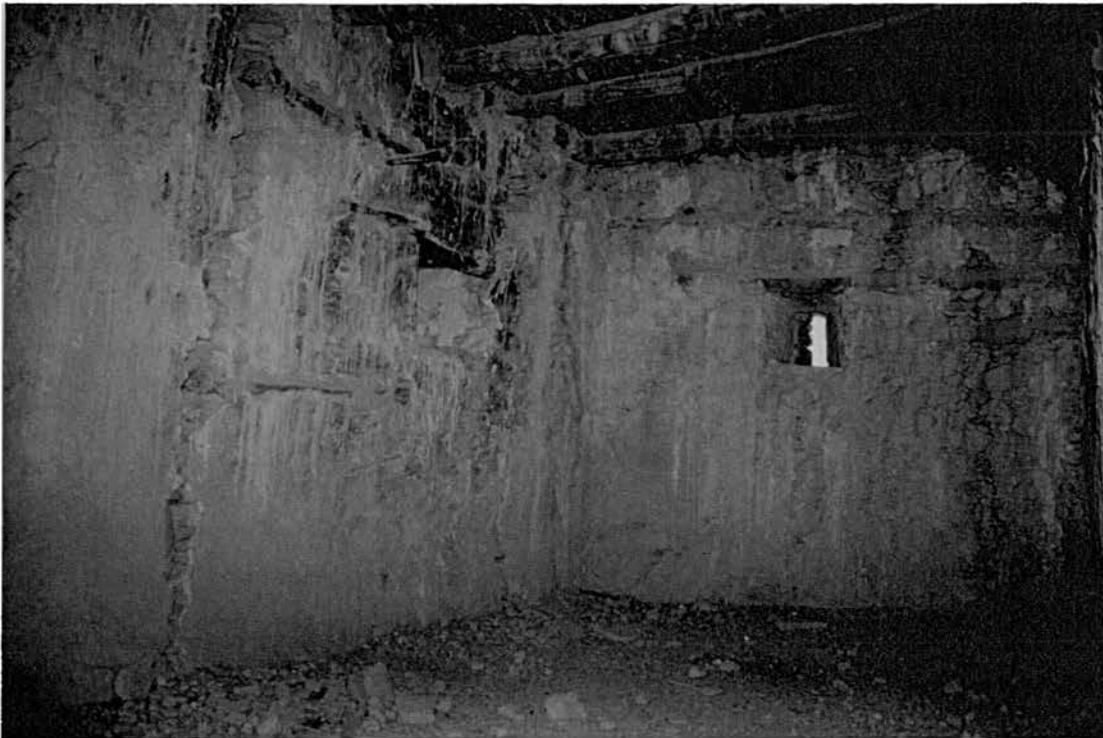


Figure 7.19.

Wood pieces, coated behind a veneering layer and alternating with stone courses in the walls of the tower.

The defensive towers of Raida fortress

The fortress

The fortress of Raida was built by a local ruler, Muhammad b. ‘Āḍ of Āl ‘Āḍ dynasty which ruled over the region from 1832-1872. Despite the short time of this rule it was marked by continuous warfare between the people of ‘Asīr (under the leadership of this family) and the Ottoman troops. This situation led to the building of this fortress.



Figure 7.20.

The fortress of Rayda in the top right hand corner and its context, after Āl Sa‘ūd.

Contrary to the norms of selecting high ground for defensive towers, this fortress is built in the lowlands of Tihāma at the foothill of the escarpment (figure 20). The site was favoured for two reasons. It is inaccessible because it is surrounded by the sharp escarpments of the highlands to the north and the east. To the south and the west are the sharp escarpments of the lowlands.

The location is fertile. It is provided with a perennial spring (*‘ain*) drained down from the highlands through an artificial water passage (*kuḍāma*) which supplies the fortress with water in times of siege. The fortress is surrounded by terraces bearing grain and fruit which in addition to the lush wild vegetation attests to the fertility of this location.

Reconstructing the fortress

At present the fortress is in ruin but a sketchy image of its original form can be identified on the bases of field observation and on the description of the fortress by local historians (*‘Asīrī* 1987, 378). The reconstruction of the fortress (figure 21) shows a rectangular thick stone wall interrupted by six bulky round towers. Within this enclosure are four duct stone towers grouped in symmetrical setting. Two towers stand at the front while the other two are at the back. These towers are oriented towards the south-west as revealed by their ducts which end up with a projecting mass of stone to defend the entries to the entry doors of these towers.

The walls of these towers lean unusually inward, resulting in pyramidal forms. This is triggered by the large sizes of these towers, and their defensive purposes. Had these towers been built upright, they would be rectangular and would become vulnerable to collapse under their own weight and under heavy artillery bombardment.

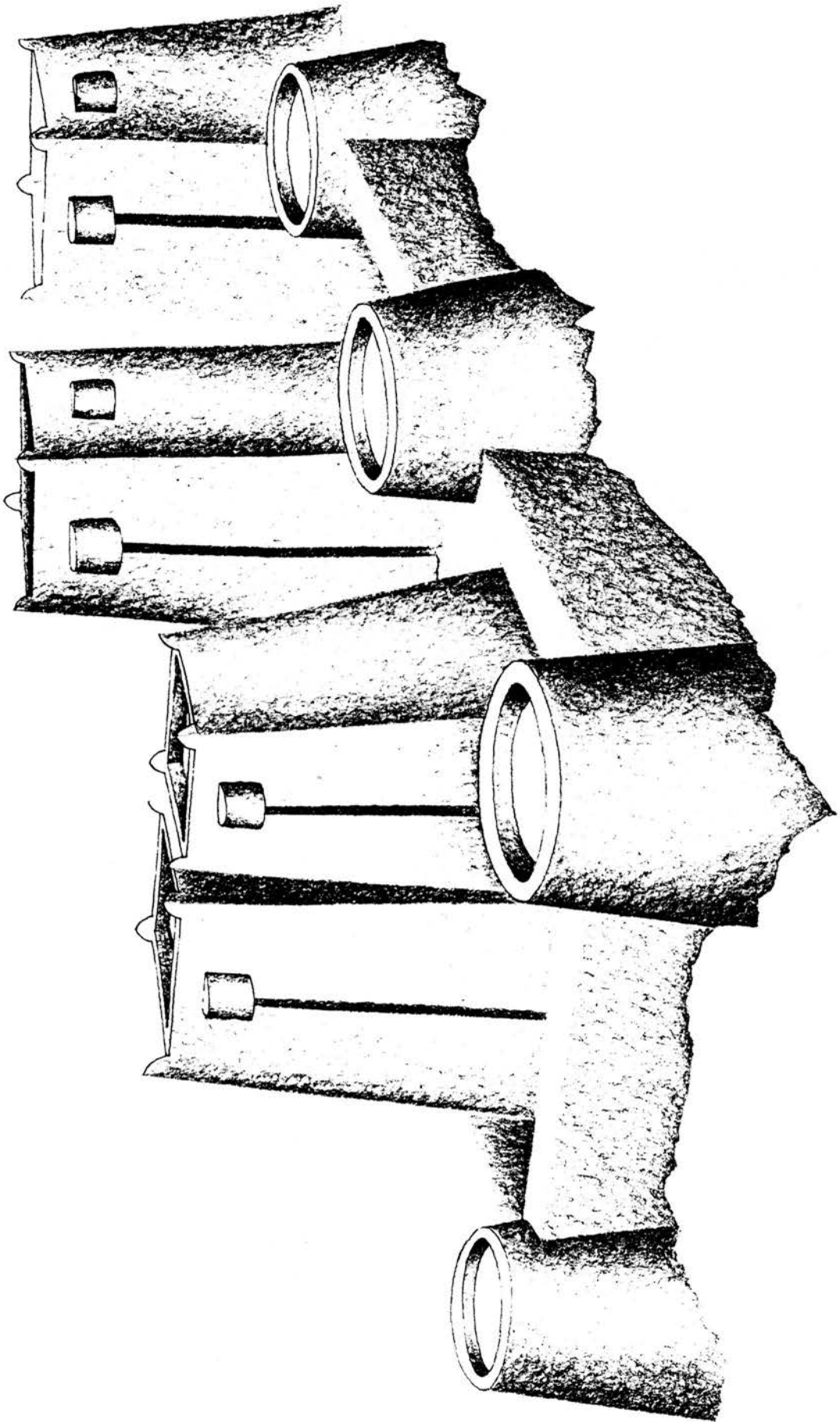


Figure 7.21.
A reconstructed perspective for the fortress.

Pyramidal forms are more stable than rectangular forms. This feature is also found in the defensive tower of Mushrif which was built in 1930 by another family rival to Āl ʿĀ id in the centre of Abha, as we shall see in Chapter IX.

According to the marks of the collapsing floors inside, these veneered towers were built up of five storeys where defenders intimate with the ruler of the highlands and the heads of tribes took up their positions protecting the fortress. The lower floors of these towers were used for storing grain and ammunition to stand a siege and the upper floors were used by the defenders shooting through the windows and through loopholes pointing in all directions. Dividing walls are absent inside ; these towers are made unbroken to facilitate communication.

A fifth tower (figure 22) is located eastward of the fortress. It controls the walkway that links the fortress to the highlands. It also defends the fortress from the south-western side. It is called Qaḥṭān after the largest confederation of tribes in ʿĀsīr. This tower is provided with a water-well and is secured on the ground by a protective thick stone wall . Like the towers inside the fortress enclosure, this veneered tower has a duct which ends up with a cylindrical projection.

The fall of the fortress

The fortress witnessed the eclipse of Āl ʿĀ id rule over the highlands, under the bombardment of Ottoman troops. After the continuous setbacks suffered by Muḥammad b. ʿĀ id in Abha and the village of al-Suqa, which is very close to the fortress, he withdrew to the fortress. ʿĀsīrī (1987, 390 gives a summary of the events that the fortress has witnessed before collapse:

The Ottoman army cut the supply line that linked the fortress to the highlands. They besieged the fortress and put it under heavy bombardment from the escarpment on the highlands overlooking the fortress. But this proved to be ineffective as the fortress withstood the bombardment. Therefore another division of the Ottoman troops seized the fortress from the lowlands, using heavy cannon brought through the Red Sea port of al-Shiqiq. The Ottoman troops singled out every tower



Figure 7.22. The tower of Qaḥṭān outside the fortress.

of the fortress and put it under intensive bombardment. This proved to be effective as the towers started to collapse one after the other. The fighting took twenty days. It was fierce so that weapons like knives and daggers were used.

The defenders of the fortress found themselves trapped between two divisions of the Ottoman army; one from the highlands, and the other from the lowlands. When

the situation deteriorated and the 'Asīrī ruler found himself losing the battle, he ordered his fellow-tribesmen to make a safe escape, something they refused; and they continued fighting until a complete surrender. After the dusk prayer in 1872 the ruler gave up himself and ten of his top men to the Turkish commander-in-chief. According to 'Asīrī (1978, 389) this is how the life of the ruler ended:

In a temporary structure built at his camp, the Ottoman commander-in-chief declared in public, in Turkish, that he intended to kill the 'Asīrī ruler . But the brother of the 'Asīrī ruler Sa'd b. 'Ā id, who knew some Turkish words, heard him, so he took his dagger and stabbed the Turkish commander in his stomach. This was followed by a massacre in which Muḥammad b. 'Ā id, a number of people in his family, and a large number of the heads of tribes were killed. The Turkish commander died after a few weeks in the Red Sea port of al-Shiqaiq on his way to Turkey as a result of his wounds.

Conclusion

Defensive towers are vital elements of the landscape across the highlands. They were built to provide refuge for people from attacks by warring tribesmen. These towers share some design features. These are:

-Defensive towers have clear spaces inside to facilitate movement and circulation inside the towers. This however is not exclusive to the south section, but is also found in the towers of the north section of the highlands.

-The ducts of these towers are used as runnels for stone missiles only when the towers are under serious threat of invasion . The ducts of the towers in Raidah fortress proved to be ineffective in heavy artillery warfare.

-Unlike grain, watch and residential towers, defensive towers always face the area where the threat is coming from , or face the most important location to be defended. Therefore the towers described above are not oriented towards the cardinal points, but to the Northwest (al-Makhaḍ) , the Northeast (Āl⁶ Ishshān) and to the Southwest (Raida fortress).

Apart from these features some conclusions can be reached about each example separately. The fertile location of al-Makhaḍ village attracted the village people to occupy the location and build their village in territory that did not belong to them. This was met by resentment from the native owners of the territory, and has led to building the village according to defensive measures where survival from tribal and territorial warfare was the essential purpose . These measures are: the watch and communication defensive towers outside the village (*al-ḥamyāt*) , the compact layout, the gates, the roof outlets and the two duct defensive towers.

These measures are hierarchical. The defensive guard towers outside the village represent the first line of defence. The second line of defence is represented by the continuous wall created by the compact layout of the village houses. The gates represent the third line of defence . Inside the village the houses can be used as places for hiding. The underground pedestrian network and the roof outlets are also other defensive measures. Finally the towers are used when the power of the attackers is overwhelming, and when previous defensive measures have failed to deter attackers. The tower is then used as a refuge and a place from which to shoot.

The village of Āl⁶ Ishshān is a model of villages across the highlands that are not built primarily as defended villages. The absence of a protective wall , roof outlets and gates to control the flow of the people into the village is an indication of this feature. This is linked to the status of the villagers. Unlike the people of al-Makhaḍ, the residents of the village are natives. Therefore they had less hostile contacts with neighbouring tribes. As a result they did not need extensive protective measures similar to those of al-Makhaḍ.

The fortress of Raida reflects a character of statehood seldom to be found in the architecture of the highlands . However the location of the fortress, the pyramidal forms of the towers, the naming of the towers after the principal tribes of the region , their ducts, and the projections above them are local products of the south section of the highlands.

WATCH AND REFUGE DUCT TOWERS

Introduction

In this chapter three duct watch and refuge towers built outside villages in the south section of the highlands are under investigation. Two towers are square in plan, but the third tower is round. Other round watch towers in this section are also selected and the performance of these towers in their context is explained. Visits to these towers provided the basic data. Although the chapter deals with the south section of the highlands, watch and refuge towers in the north section of the highlands and in the interior of the lowlands are briefly described.

The watch tower of al-⁶Ain village

The village

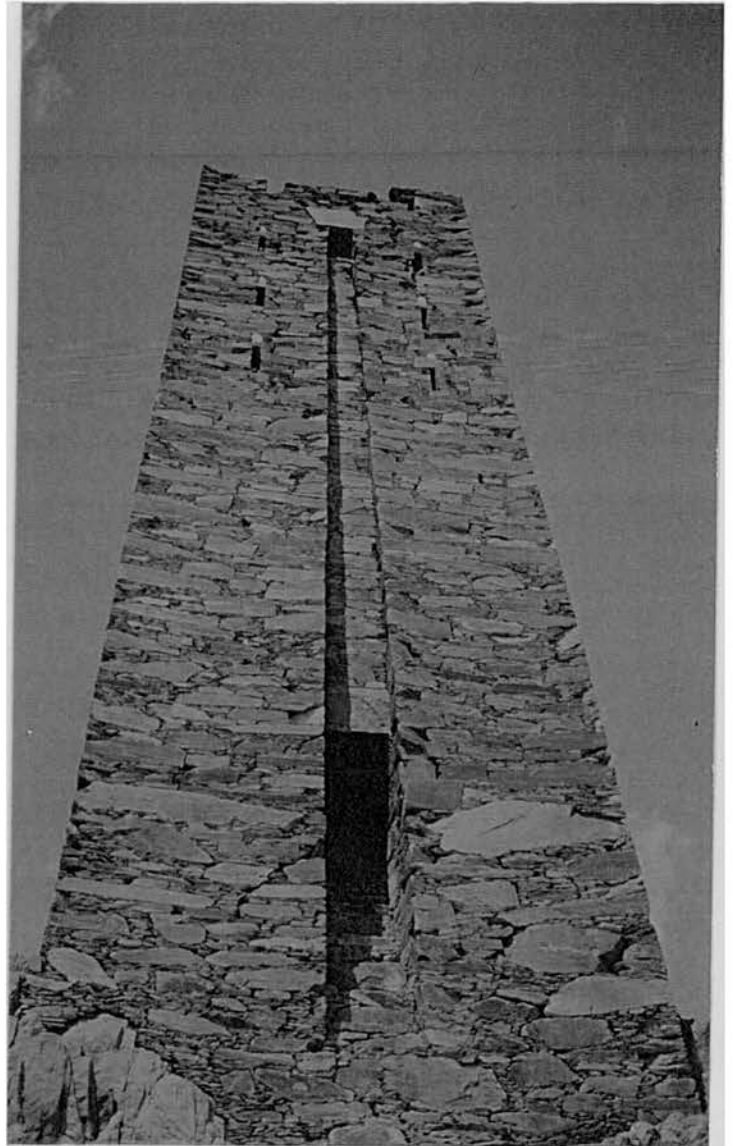
Al-⁶Ain village (figure 1) is divided into two sections . The village watch tower (A) stands between the north (B) and the south (C) sections. The north section of the village is built up of composite residential towers, interrupted by newly-built concrete houses. The south section is built up of stone towers, interrupted by composite towers. Some tower-houses are still in use, others are in various stages of collapse. The two sections are separated by the fields (D) , which are protected by two watch towers (E) on the east side. A third watch tower (F) is on the east side of the village. The village is named after a running water spring (G) that has supplied the villagers with water, but now the spring is covered under a regional highway.

Main features of the tower

The tower (figure 2) has a square plan measuring less than four meters per side. The tower is three times this as high. The shallow duct running at the centre of the main facade is terminated at the upper and the lower ends by two stone slabs. Both provide structural protection for the openings underneath them against the loads exerted by the tower. This explains their vertical form as against the horizontally laid stones of the tower. The tower is provided at the top with loopholes which are marked outside by white quartz.

Figure 8.2.

The main facade of the tower.



The tower is built on a rugged site, which makes approaching and entering the tower a difficult task, as experienced during the field trip. The rocky ground of the site provides structural stability and works as a platform for the tower. The tower is built of local stone and, as a result, the tower is a vertical projection of the site.

The tower as a warning point

The tower is oriented eastward, as revealed by its duct, and commands excellent views over both sections of the village, the fields and the surrounding area. The tower communicates with the round tower (F) at a distance from the village and the two round towers (E) in the fields. A guard occupying the tower can watch the fields and protect them against birds, locusts, and thieves. Attacks by hostile tribesmen are quickly observed by the guard who, by screaming, by lighting a fire (al-Ḥarīrī, 1987, 44), or by rifle-shot, warns the people in the fields to take protection inside their tower-houses. The location and orientation of the tower is therefore based on the concept of surveillance.

The tower as a retreat

The tower is also used for refuge. The rugged location of the tower works as a shield that hinders attempts at attacking it. Attackers crawling up against the rugged rocky ground, in their attempts to invade the tower, lose precious time in reaching the entry point of the tower. While approaching they become easy targets for missiles thrown down from the top of the tower.

The entry point

Unlike the entrance doors of grain and defensive towers, the entry point to the tower (figure 3) is designed to make attempts at forced entry to the tower a difficult task. This has been done by elevating the entry point ten steps above ground level, and by pulling it deep inside the tower, which creates a narrow elevated space. Travelling through the space, one must bow one's head because of the exceptionally low roof of the tunnelled space, which mirrors the steps leading to the entry point.

The interior

The tower (figure 4) has three floors. The walls of the first and second floors are sealed, while the walls of the third floor are punctuated at their ends with loopholes on three sides. The west side is sealed off as a sign of its insignificance. The design of the loopholes is typical of those of other towers in the highlands. Going up is through the superficially stone steps projecting out of the inside walls of the tower. These can be used as staircases leading up, or ropes are tied against them to climb the tower.

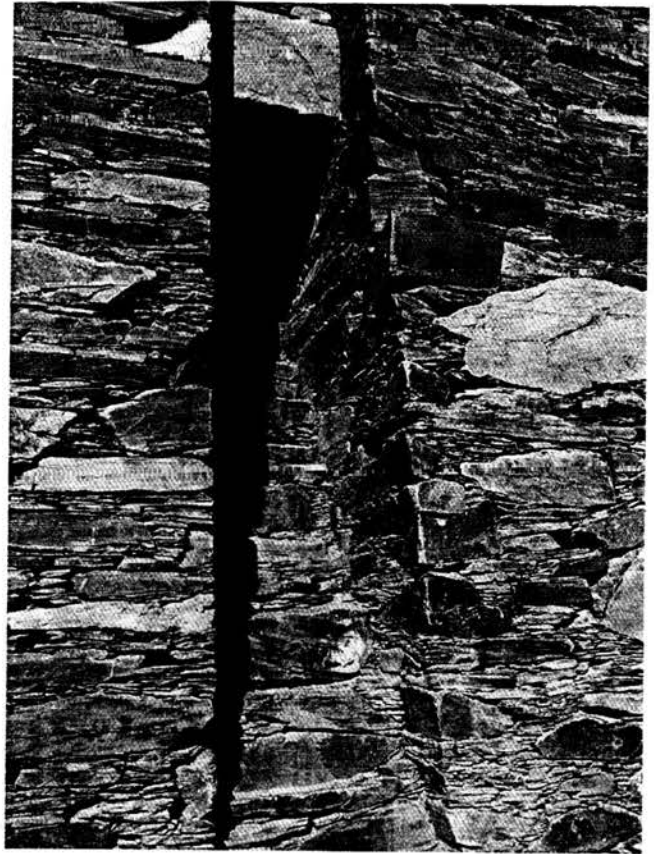


Figure 8.3.

The entry point to the tower, after al-Ḥarīrī

In a similar feature in the defensive tower of Āl Manṣūr tower in al-Makhaḍ village, the tower is provided with an aperture which is pulled from one corner of every floor, to the other side along the back wall of the tower. The reason for this feature, as seen in the tower of al-Makhaḍ village, is to avoid injury from falling.

The tower is dark inside. The only light source is the aperture on the top floor of the tower, which brings in faint light. This gives a clue to the usage of the tower; it is used as a hiding place. A defender uses the darkness as a cover and attacks the invader who is busy finding his way through the darkness. The other suggestion is that the spaces of the tower are never used, and therefore there is no need to light them. Defenders retreat to the roof and defend themselves from the top through the duct, the loopholes, and the apertures.

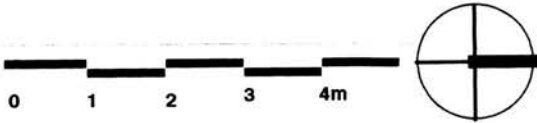
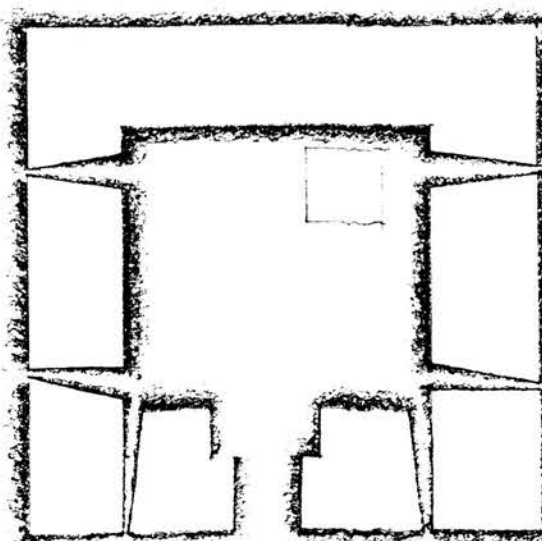
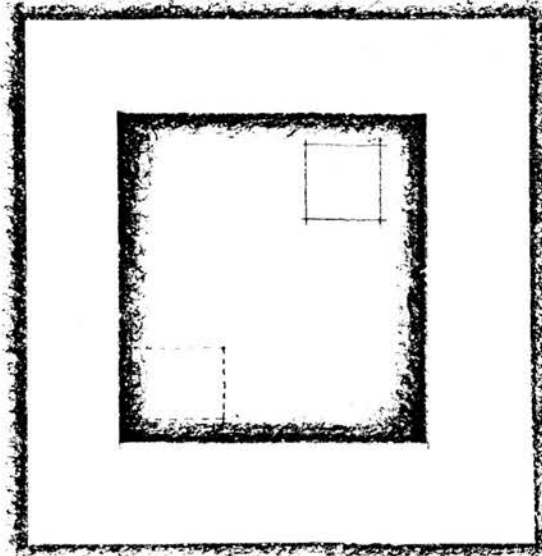
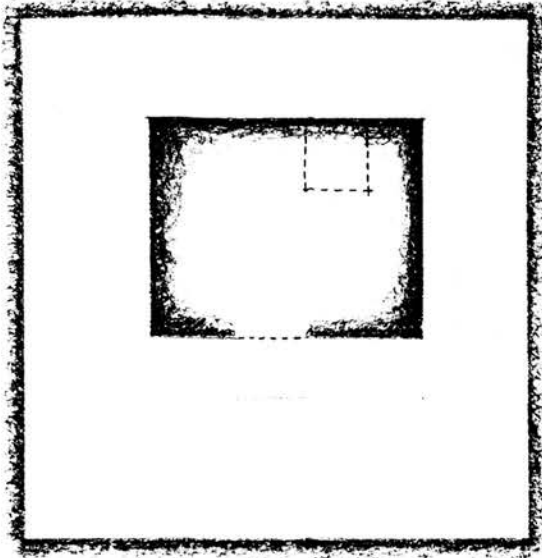


Figure 8.4.
(top) first floor plan,
(centre), second floor plan,
(bottom) , the roof plan,
(next page) a section.

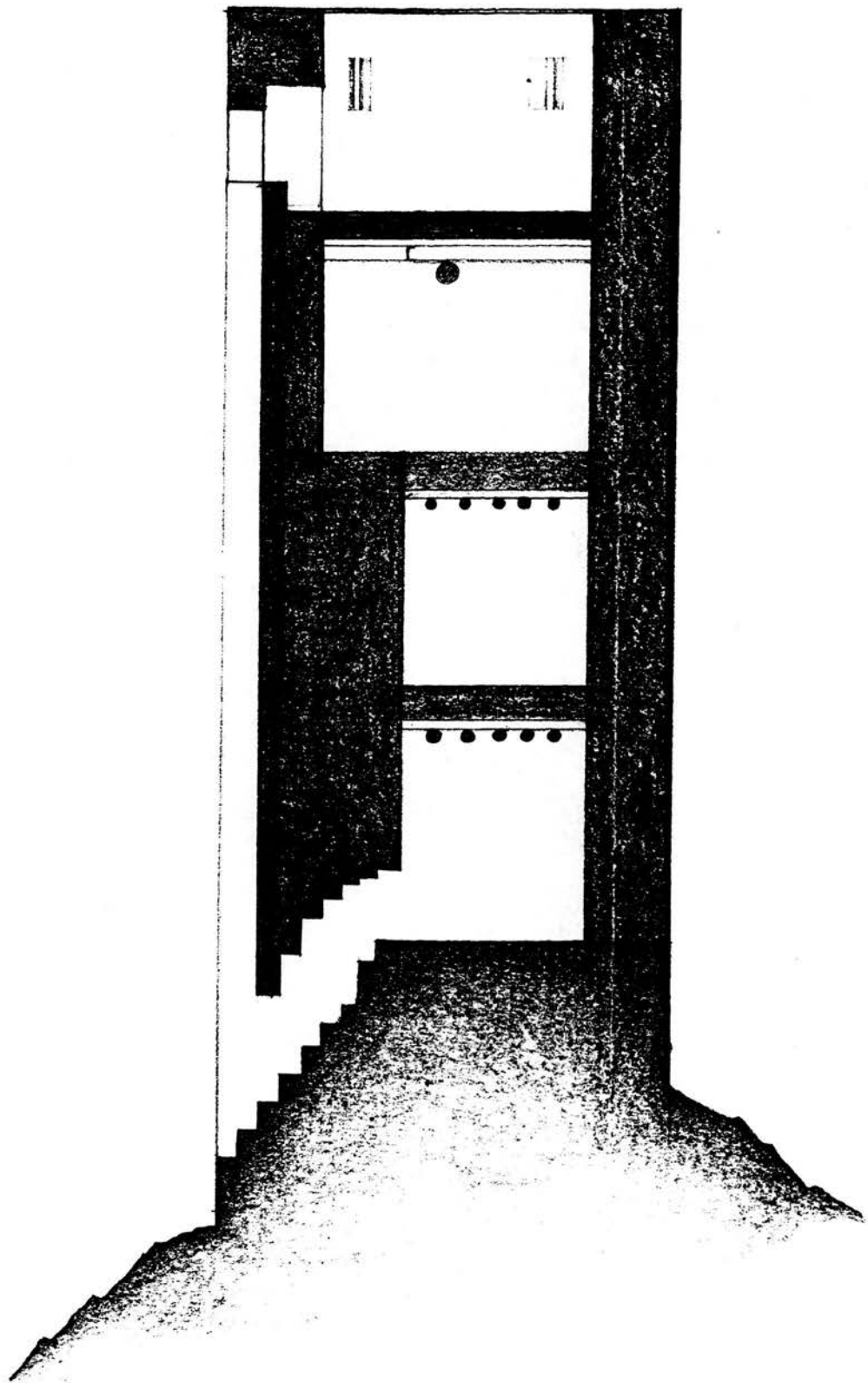


Figure 8.4. a section.



The roof of the tower is crowned by a 1.3 m. parapet punctuated by loopholes from all sides but the west . The main feature of the roof is the opening, at the centre of the front wall (figure 5) which terminates



Figure 8.5

The window at the top of the tower, after al-Harīrī.

the duct . Through the opening defenders drop their missiles on the heads of the attackers who are trying to enter the tower.

The similarity of the tower to watch towers of the north section of the highlands.

A brief description of watch towers in the north section of the highlands has been given in the following statement:

"Associated with these villages are three-storey square stone towers with a parapet presumably used as watch towers." Hester (1984,32)

These villages are built in the north section of the highlands. The parapet is a principal feature of villages and towers of the north. According to the statement these towers (figure 6) have three floors inside, in a similar organisation to that of the watch towers of al-ʿAin village. The elevation of the entry points and the provision of a watch window on top of the tower is also similar.

The building of these towers and villages is driven by similar social conditions, namely the tribal warfare, as stated by Zarins (1983):

"This suggests that late in the Islamic period there was an increase in defensive protectorate villages. The time of construction of these settlements has not been established. They could well be several hundred years old."

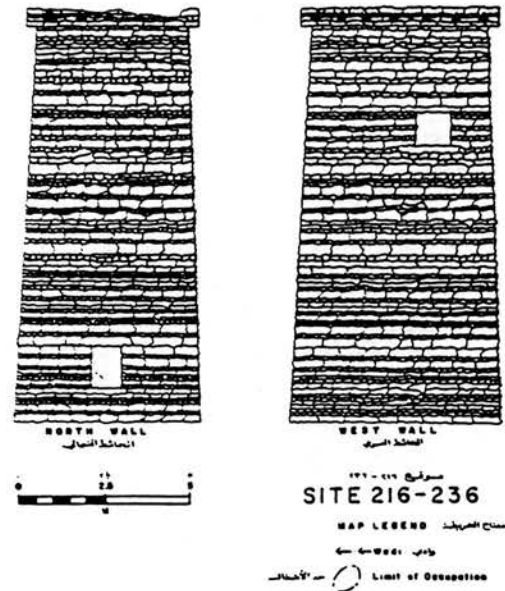


Figure 8.6.
Watch towers of the north section of the highlands, after Zarins.

The same social context applies to the watch towers of al-ʿAin village. And it shows that defensive requirements of building watch and refuge towers has been a landmark feature that typifies not only the lives of people across the south section of the highlands but also the people of the north section in the last several hundred years.

The tower and the village of al-ʿAin are located in the territory of Banī Rizām, a sub-tribe of Banī Mālik of ʿAsīr. The territory has been described in by Zarins (1981, 33) :

" In the higher ʿAsīr highlands, we find additional abandoned villages Particularly noteworthy are Banī Rizām and al-FayyaOrnamentation on door lintels and windows with white quartzite is also distinctive. "

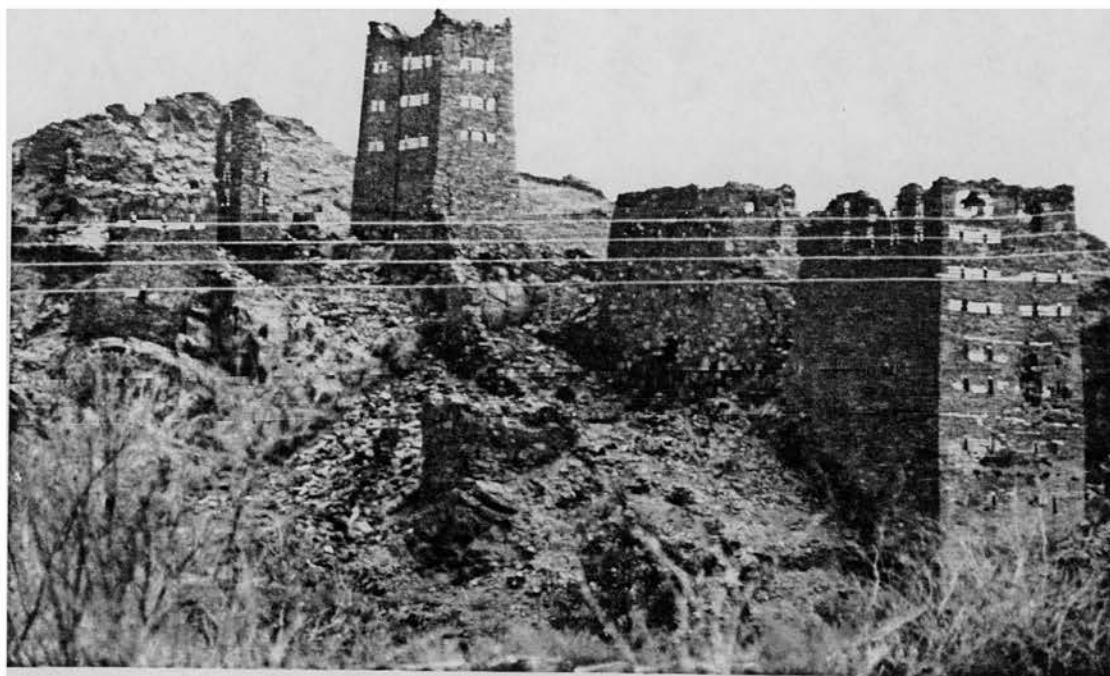


Figure 8.7.

The collapsing residential towers of al-Fayya village.

The village of al-Fayya (figure 7) is five kilometres north of al-ʿAin village, and is built of compact stone towers. The village is protected by a number of round watch towers oriented eastward in a similar way to the watch tower of al-ʿAin village. This indicates that the unsettled tribesmen of the interior plateau inflicted sufficient losses on grain and livestock to justify the towers and their orientation.

But this situation is not limited to the south section of the highlands. It is also noticeable (see Chapter Five) in al-ʿAuṣāʾ village, in the central section of the highlands, where grain towers are used as watch towers oriented eastward to detect danger from the raiding nomads from the east.

The watch tower of al-Malāḥa

The physical context

The tower (A) is built over the highest point of a hillside flanking (figure 8) a collapsed old village (B) at its southern end. The tower faces north, as indicated by its duct. The tower and the collapsed village are surrounded from the east, the west, and the north by fields (C) of different sizes corresponding to the curvature of the water channels (D) bordering them. Across the water channel to the north side are the remains (E) of another collapsed village. The remains indicate that this village contained towers similar to those of al-Fayya village. There is also a newly-built village (F) of stone and composite single towers.

With the exception of the two collapsed villages to the north side of the tower, there is no indication that the tower is involved in a communication system. The recently-built village to the north of the tower is not provided with watch towers. No remains of surviving or collapsed watch towers are found in the vicinity. The design features of the tower, as we shall see shortly, exclude the use of the tower as a grain or residential tower. Therefore the tower is presumably the only watch tower of the vicinity, and was used to protect the two collapsed villages to the north side of the tower , the fields and the surrounding area.

The tower

The tower (figure 9) is built of two parts. The first part is a square platform that surrounds the tower on all sides. The platform is raised at least four meters above ground level. As it goes up it produces a recess. It ends up at the back side of the tower

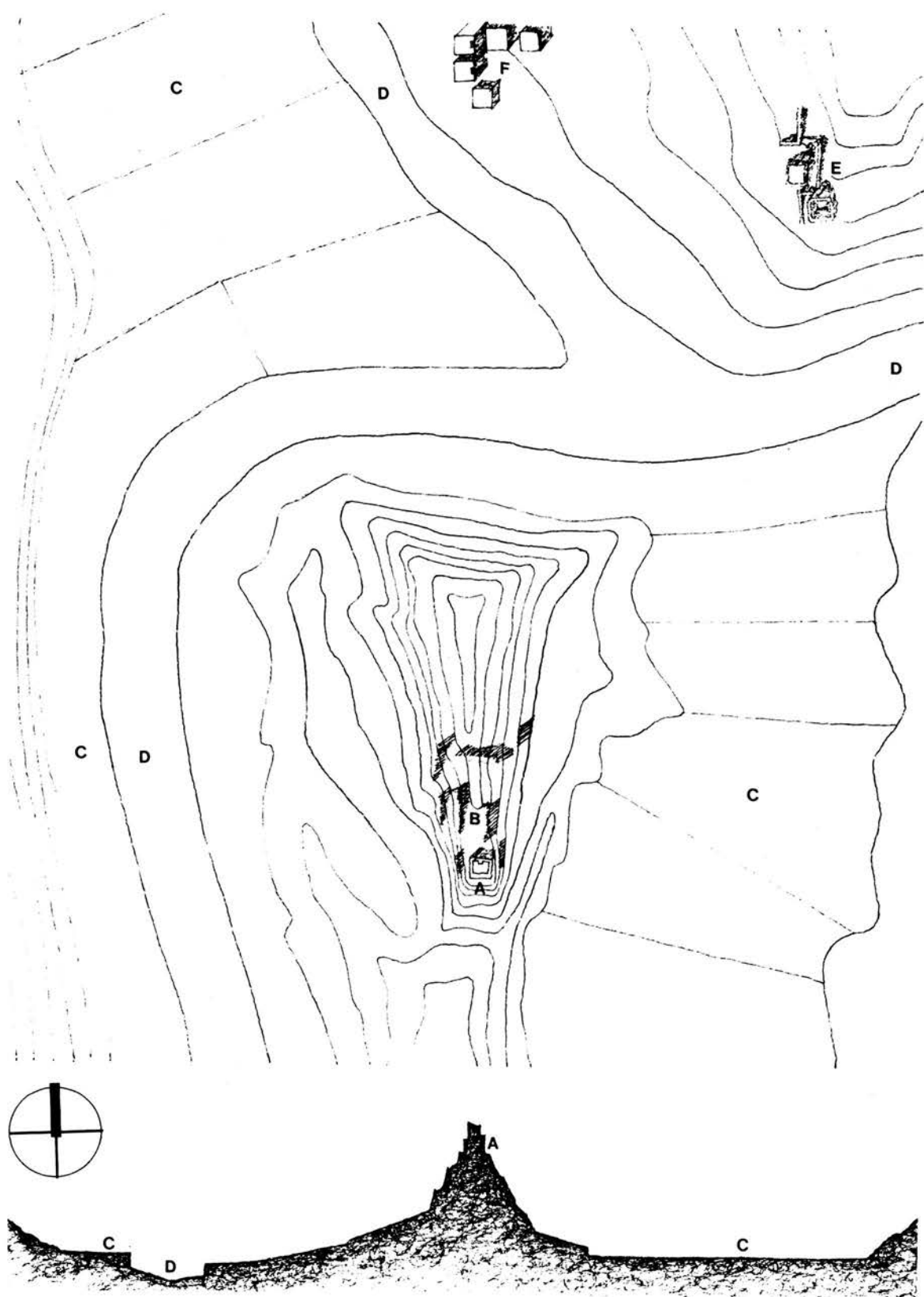
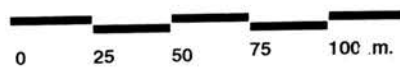


Figure 8.8.

The tower in context, (top) site plan, (bottom) site section.



Unfortunately the tower has collapsed, and therefore it is difficult to know precisely how the platform ended at the top. The second part is the tower projecting upward from the platform. It is provided with a duct and the loopholes marked outside by white quartz.

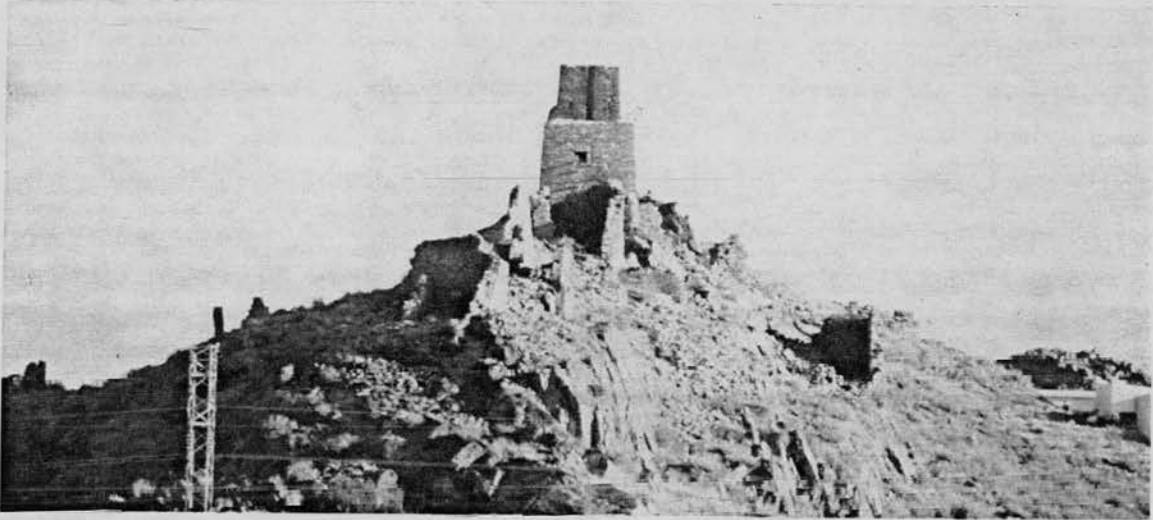


Figure 8.9.
The north side of the tower.

The entry point

The north wall of the platform is penetrated at the centre by the extremely narrow entry point which is raised about two meters above the ground. It is approached by five stone steps projecting out of the wall. These are laid out so that entry to the tower is most difficult. To approach the entry point, the invader must open his legs wide to be able to move upward from one step to another as experienced on my field trip. Easy climbing like that provided in normal staircases is denied here. The tunnelled space above the entry point is identical to that of the watch tower of al-⁶Ain village.

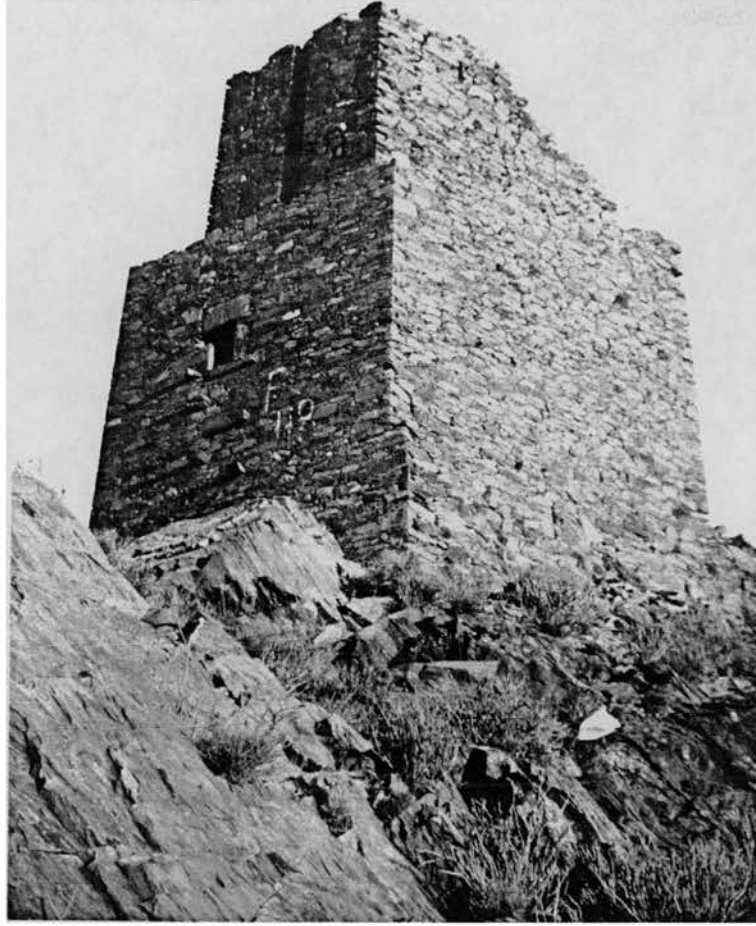


Figure 8.10.

The Northwest side of the tower

The interior

The square plan of the tower (figure 11) is interrupted inside by two features: a supporting wall at the centre of the east wall, and the curvature of the north wall . As seen in Chapter Four, this curvature provides depth to the wall so that the duct and the entry tunnel can be carved out. There is no indication that the tower ever had a staircase. Therefore one may conclude that the tower was provided with projecting stone or wood steps used for climbing, which is the normal way of vertical circulation in watch towers. Unfortunately it is difficult to proceed to further description of this tower owing to its dilapidated condition.

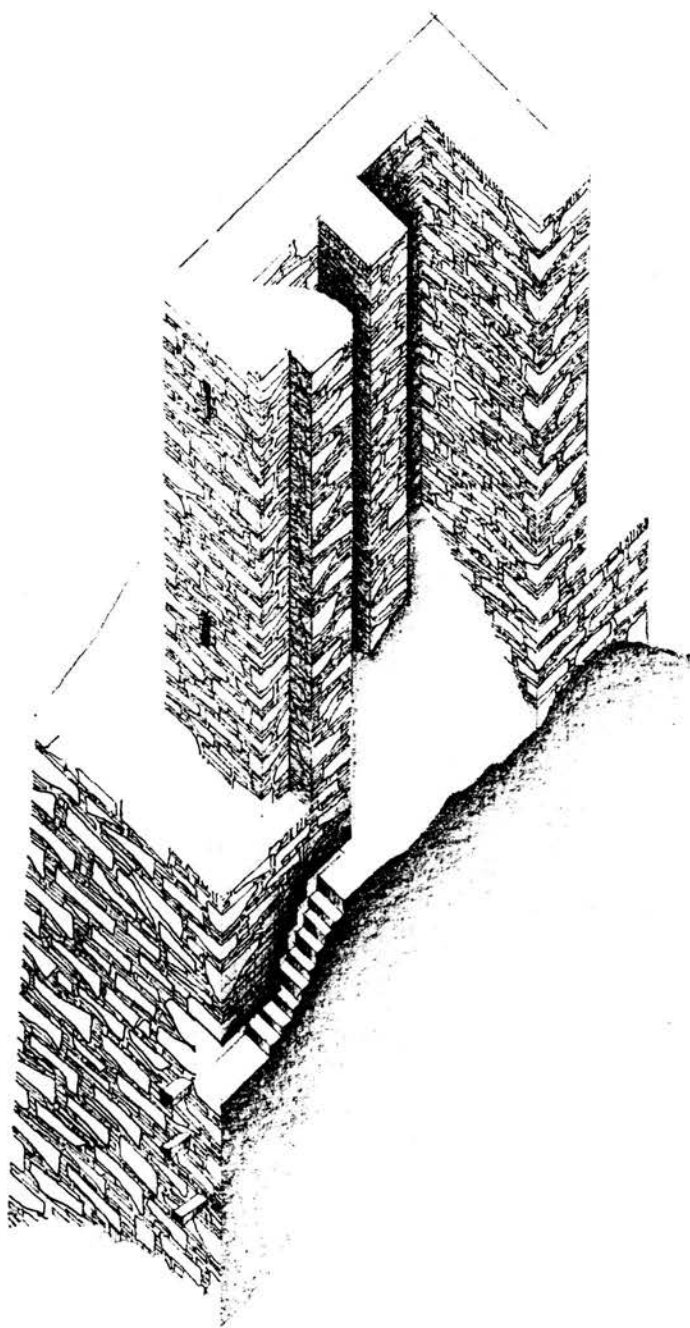


Figure 8.11.

Isometric view of the tower

The recess of the platform produces a spiral-like form. This feature is peculiar to this tower. It has never been found in any tower across the highlands and its purpose is a matter of speculation. It is possible that the spiral-like platform was used as a staircase leading to the top of the tower. But this suggestion can be easily refuted. Going up to the top of the tower is through the entry point in the north side of the tower. Even though, providing a staircase outside the tower would jeopardise the lives of the people, as they expose themselves to the danger of attackers.

Structural platforms at the bases of towers are common across the highlands. Therefore one assumes that the spiral-like platform is driven by structural necessities. The survival of the tower from collapse can be attributed to the spiral-like platform which supports the tower. The remaining walls of the collapsed village show that these walls had no platforms, and therefore they were subject to collapse.

The collapse of villages built on high locations, because of structural faults, is a well-known phenomenon. In the following statement (Hester, 1984, 121) is a description of a compact village in the north section of the highlands :

"The later sites (villages of later Islamic periods) are all built on top of isolated jebels rising 50 to 70m above the floor of the adjacent wadis. These sites are small to medium-sized, multi-storey, contiguous room blocks. The walls are from .6 to 1m in thickness and consist of flat stones laid in courses. The structures are rectangular, two and three storeys in height and feature rectangular doorways and windows with either stone slab or wooden lintels. "

This account is in agreement with the conditions of the ruined village beside the tower. The high location of these villages along the wadi and the thickness of their walls is also similar. The number of floors and the use of stone or wooden lintels in these villages are basic features of stone compact villages of the south section of the highlands.

The statement also gives the reason for the collapse of these villages :

" The precarious perch of these villages and the height of their walls also contributes to the collapse of their walls. "

All this points to a structural interpretation of the platform. To avoid the risk of collapse as a result of its high location the tower is provided with a platform.

The collapse of these villages is attributed to using wood lintels for doors and windows, which as time passes have disintegrated under the effect of climatic conditions. Therefore using wooden lintels contributed to the collapse of their walls. But this also explains the survival of the two watch towers of al-⁴Ain and al-Malāḥa villages, where the lintels of their entry points were made of stone slabs. There is no evidence of using wood in the construction of walls in either tower. Therefore the durability of stone slabs - they resist the disintegration caused by climatic conditions- must have been the source of the survival of both towers.

This assumption is supported by the local term used for the platform. It is called *al-Kiswa* which means "the garment " . It suggests that the platform protects the tower from the outdoor environment. Damage can be climatic like that of rain. But the platform does not provide protection against rain, wind and sun. The most common technique of protecting stone towers from rain is by veneering them. But the platform is not veneered. It is built of naked stones, and is vulnerable to rain as the rest of the tower is. The principal risk that the platform (" the garment ") can prevent is the risk of collapse, which justifies its purpose.

Before ending this statement it is useful to see how similar watch towers built alongside Wadī Ranya in the north section of the highlands are described by (Tamizae 1840, P140) :

" The residential quarter is provided with four towers to protect the village against attackers. These towers have no doors, and have round forms from the inside provided with ladders for ascending and descending. But how these towers are approached is that each tower has a hanging rope from the outside, used by defenders for climbing. In peace the rope is left hanging as low as a man's height. But in war the rope is pulled inside and is used to pull ammunition up to the defenders of the tower."

The round watch tower of Wādī 'Ushrān

The physical context

The tower stands isolated (figure 12) on the west side of a water channel called Wādī 'Ushrān occupied by 'Alkam. The tower is surrounded on the west and the north sides by irregular grain fields protected against floods by stone supporting walls. The village of the farmers using the fields and to which the tower is attached on the west side of the tower beside the water channel. The tower is now in a collapsing condition, however, according to the local people, a brief description of the tower and the way it was used can be made.

The tower corresponds to the water channel and to the fields. Water channels are used by people as walkways to their fields and in their travels (Stone, 1985, 30). Therefore the points where they bend are significant. Watch towers are built at these points to warn farmers of potential dangers. Guards occupying the tower see the water channel from the east and the south sides. As they detect danger they signal to the farmers in the fields to take refuge inside their houses.

The interior

The tower (figure 13) comprises a round mass of stone about nine meters in height. The entry door to the tower terminating the duct at its lower end is oriented eastward at an axis perpendicular to the water channel. The tower is hollow inside except that stone steps project slightly out of the wall and are placed at irregular

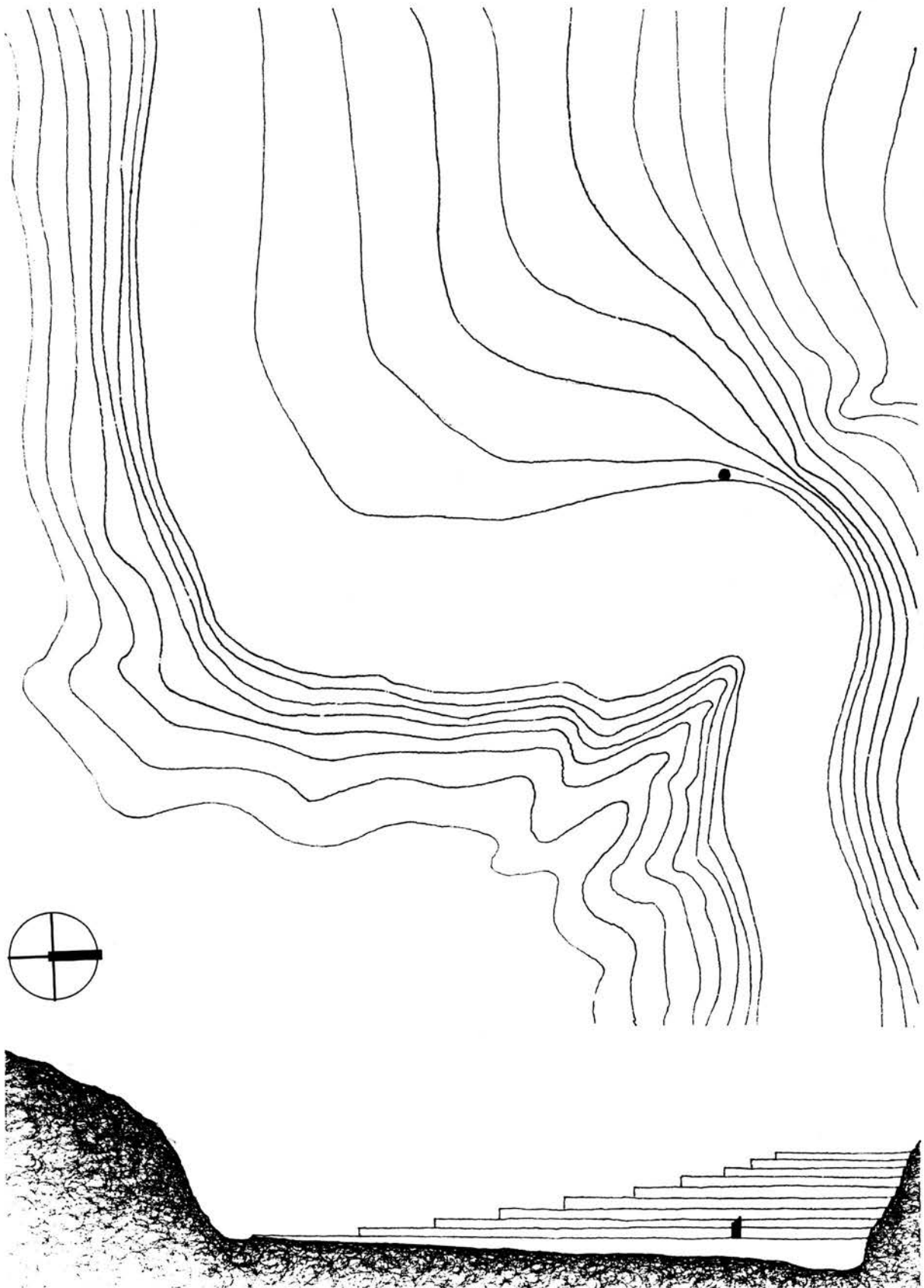
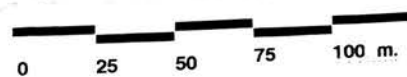


Figure 8.12.

The tower in context, (top) a site plan, (bottom) a site section.



intervals as they lead up. The tower is punctuated by three watch windows at different heights, all pointing to different directions. The first window which terminates the duct is oriented eastward. The second window is about one floor lower and is oriented southward. The third window is one floor above the ground and is oriented northward. The height and the orientation of these windows is based on surveillance principles.

The first window is raised all the way up to enable watchmen at the top of the tower to see as far as possible advancing enemies from the east. The second window pointing southward is raised half way up because danger is expected at a closer distance: the south end of the water channel. The third window is raised only one floor above ground to establish visual contact with the farmers in the neighbouring fields. Therefore each window is raised a reasonable distance which corresponds to the side from which danger is most likely to come.

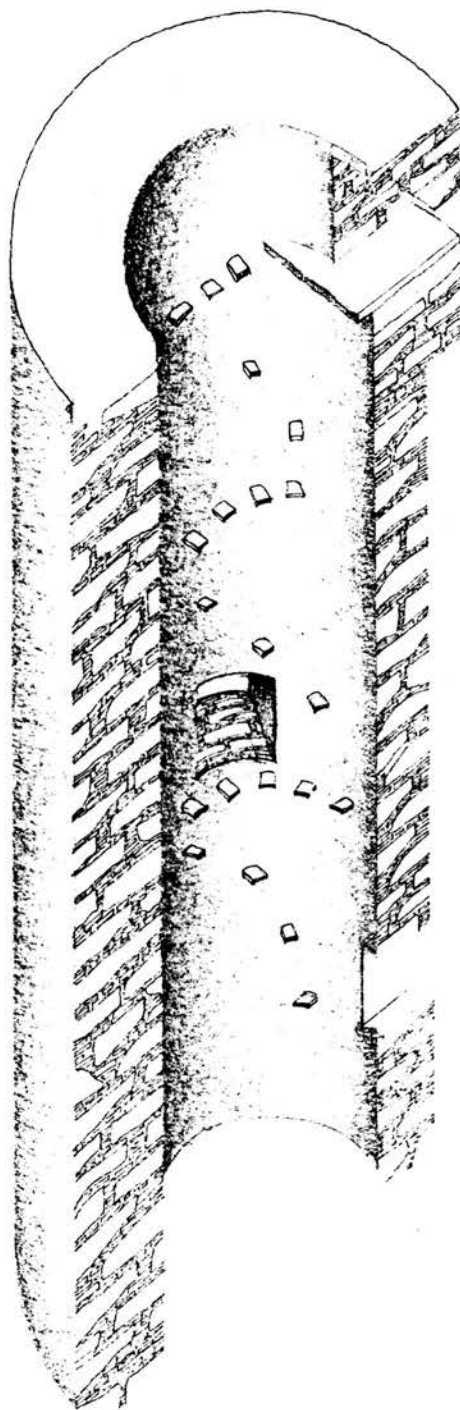


Figure 8.13. The interior of the tower.



The tower as a refuge

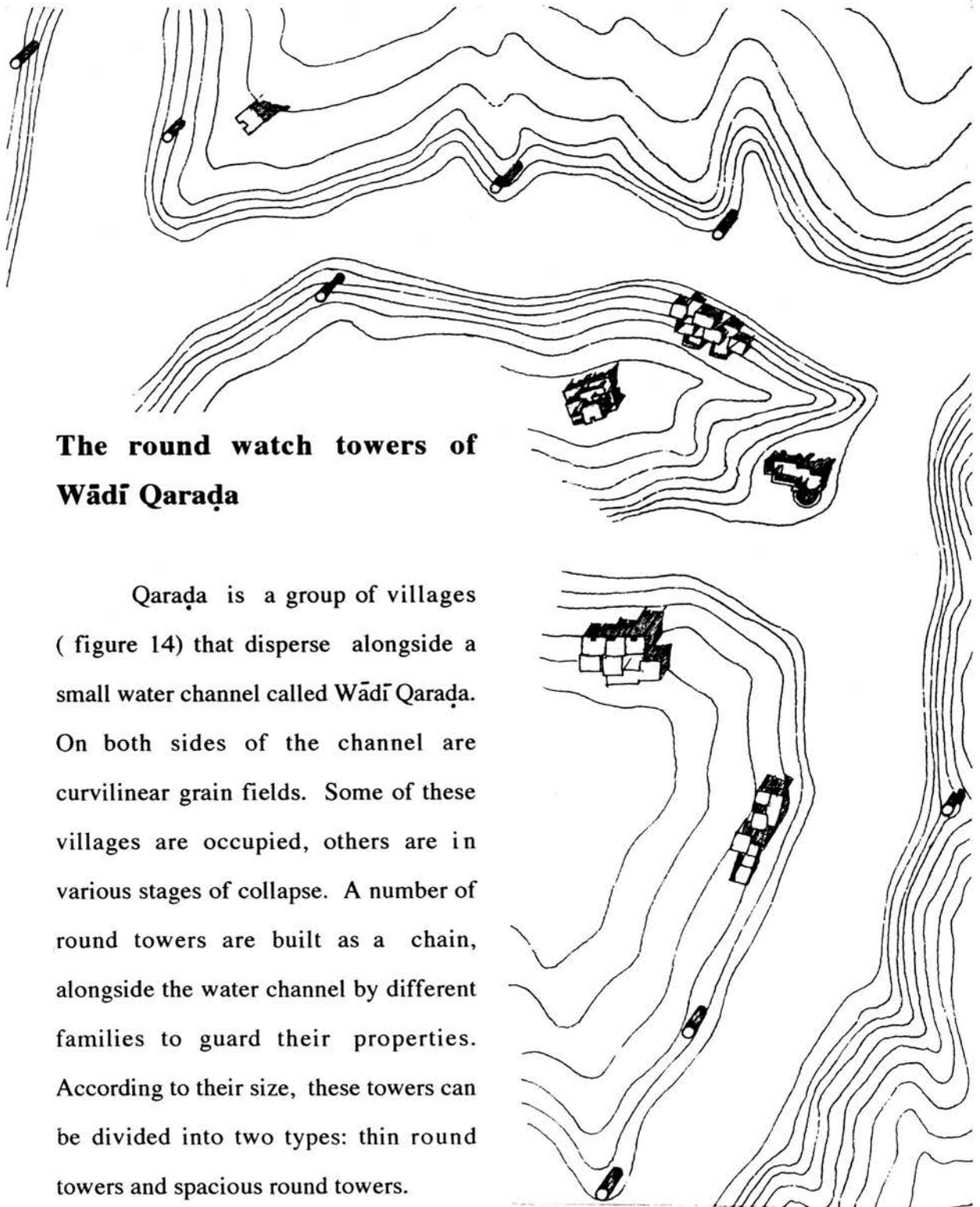
If a villager involved in farming the fields or travelling alongside the water channel were to be attacked he would take refuge inside the tower. As he gets through the entry point he goes up either by ropes or by climbing the slightly projecting stone steps. On his way up he needs a recessed space, to distance himself from his attackers and to attack them with stone missiles from the top. If he does not succeed in deterring them, he goes up to another recessed space from which he defends himself by throwing more stone missiles. If these attempts fail he retreats into the third space at the top and attacks them from there. The recessed spaces are the three watch windows.

As long as the defender is using the tower in his escape from attackers he can be seen in the window by his people in the fields who come and help him deter the attackers. Therefore these windows are used to keep in visual contact with people in the surroundings.

Round stone towers are native only to the 'Asīr tribe. According to Abū 'Abs (1986, 43) this is a result of the size of stone used in building the towers. In the central section of the highlands stone pieces used for building towers are large. But in the highlands of the 'Asīr tribe, in the south section of the highlands the stone pieces used for building are very small, thin, sharp and easy to manage, as I have observed in field trips. This feature makes the building of round walls possible. Before ending this section it is useful to note Philby's account (1976, 139) of composite round watch towers in the territory of Banī Mālik of 'Asīr in this statement:

"Each dwelling was more like a watch-tower than a house, very tall in relation to its slender girth, completely circular and furnished at intervals up the structure with a jutting fringe of slates sloping slightly downwards, presumably to protect the clay walls (built on masonry foundations) against the heavier rainfall of these parts."

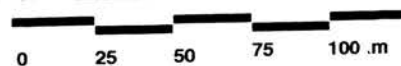
These towers are located in zone B in Hījlā, ten kilometres east of Abha.



The round watch towers of Wādī Qaraḍa

Qaraḍa is a group of villages (figure 14) that disperse alongside a small water channel called Wādī Qaraḍa. On both sides of the channel are curvilinear grain fields. Some of these villages are occupied, others are in various stages of collapse. A number of round towers are built as a chain, alongside the water channel by different families to guard their properties. According to their size, these towers can be divided into two types: thin round towers and spacious round towers.

Figure 8.14. The round towers and villages of Wādī Qaraḍa.



Thin round towers

The thin round towers are similar inside and outside to the watch tower of Wādī‘Ushrān, with one exception : they are not provided with ducts. Some towers are oriented so that their entry points face each other. In other towers the entry points are oriented to different directions and each tower protects the fields immediately adjacent to it. Wādī Qaraḍa and its surrounding area contain the largest number of these towers. Among the round towers of the ‘Asīr tribe these towers are also the highest.

The tower shown in figure 15 illustrates these features. The tower is cylindrical, and is broken at equal heights by three bands of white quartz which ring the tower, enhancing its round form. As in square towers, the entry point to the tower is raised one floor above the ground, which indicates that the tower was used as a refuge. It is approached through stone steps projecting out of the round wall of the tower, similar to the arrangement on the tower of al-Malāḥa. The slightly projecting stone steps inside the tower can also be seen.



Figure 8.15.

A watch tower in Wādī Qaraḍa.

Although these towers are round outside, some of them feature an irregular layout inside. Wood is inserted inside their walls to carry the stone rubble. It also enables defenders to climb these towers easily without the need for ropes. The entry points to these towers are designed in a similar way to those of the al-ʿĀīn and al-Malāḥa watch towers. Some of these towers are also provided with stone slates to protect their entry points.

The performance of these towers (figure 16) is described in the following statement. Location A represents a danger. Location B and location C represent two thin watch towers, where the entry doors of both towers face each other. As the channel bends it becomes impossible for the man occupying tower C to see the danger beyond the curvature. The high mound is responsible for the blocking of visibility. As the danger

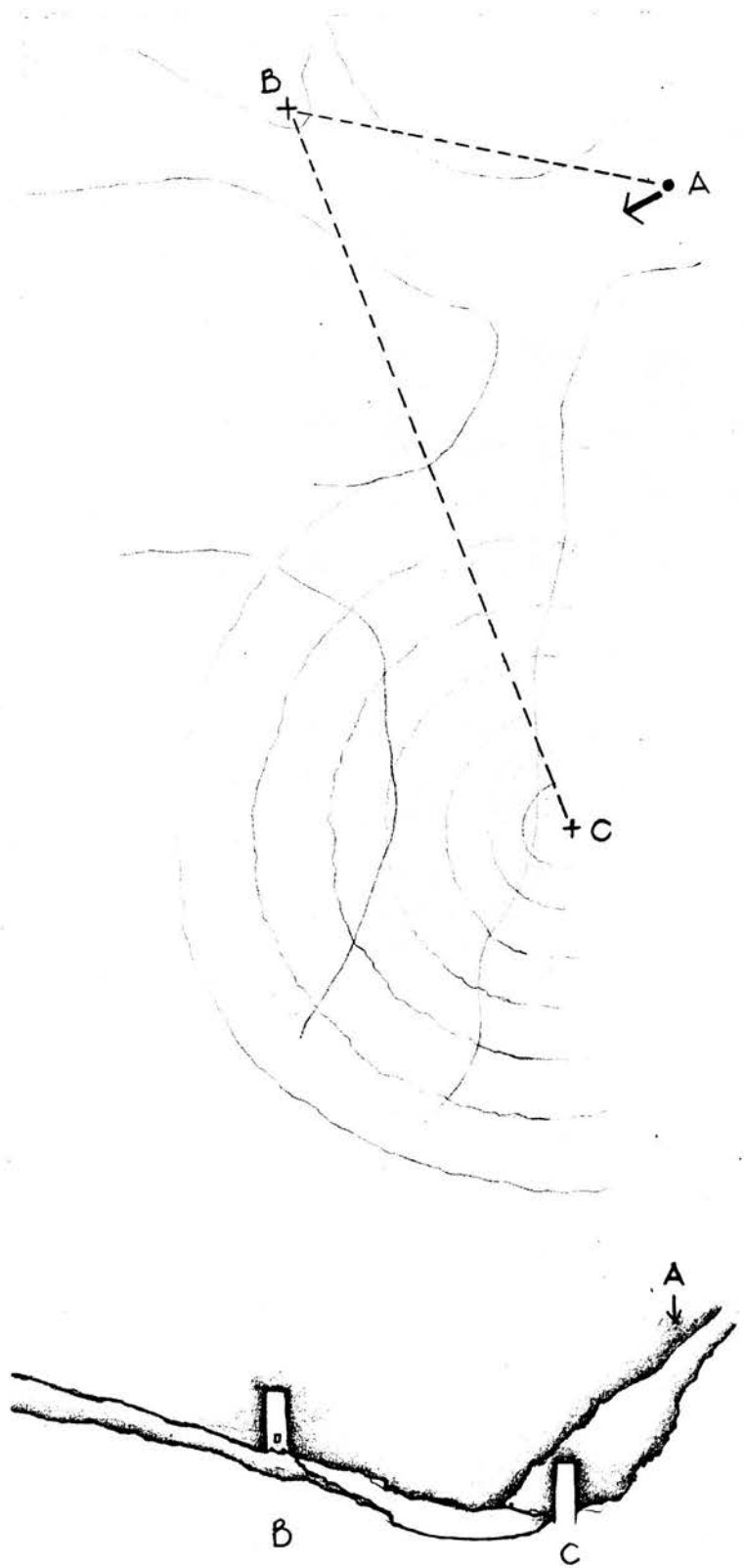


Figure 8.16.The performance of watch towers in Wādī Qaraḍa ; top, plan; bottom, a section.

is spotted by the watchman of tower B it is reported to the guardsman in tower C by flag or by screaming, and he warns farmers in the fields to take refuge in their defensive towers inside their villages. This warning system applies on other towers in many similar locations across the highlands. The dangers are looters, or those who have wergild with the occupants of these villages. The danger can also be wolves or floods.

Spacious round towers

There is another type of round tower exclusive to Wādī Qaraḍa and its surroundings. These towers are much wider in diameter than thin watch towers. They are always built into other round or rectangular structures in the fields, which indicates that they might have been used as granaries. They are now deserted and most of them are in a state of collapse. The purpose of these towers is a matter of speculation. It is difficult to believe that these towers were used as watch towers. Their massive size (measuring about nine meters in diameter) and the large number of loopholes punctuating their round walls indicate that these towers were used as defence and refuge towers for a large number of the local people. Owing to the destruction of their important features, it is difficult to know what exactly the purpose of these towers was. But some suggestions can be made.

Figure 17 illustrates one of these towers. It is found beside fields and attached to a deteriorated structure. The entry to the tower has collapsed which makes further description impossible. The tower, as indicated by the grooves left on the inside walls, is made up of three floors. It is divided by a cross wall into four parts which open into each other through doorways. This organisation is repeated on the three floors of the tower. The tower walls lean inward producing a truncated conical form. The exterior decoration is limited to two thin white bands of quartz.

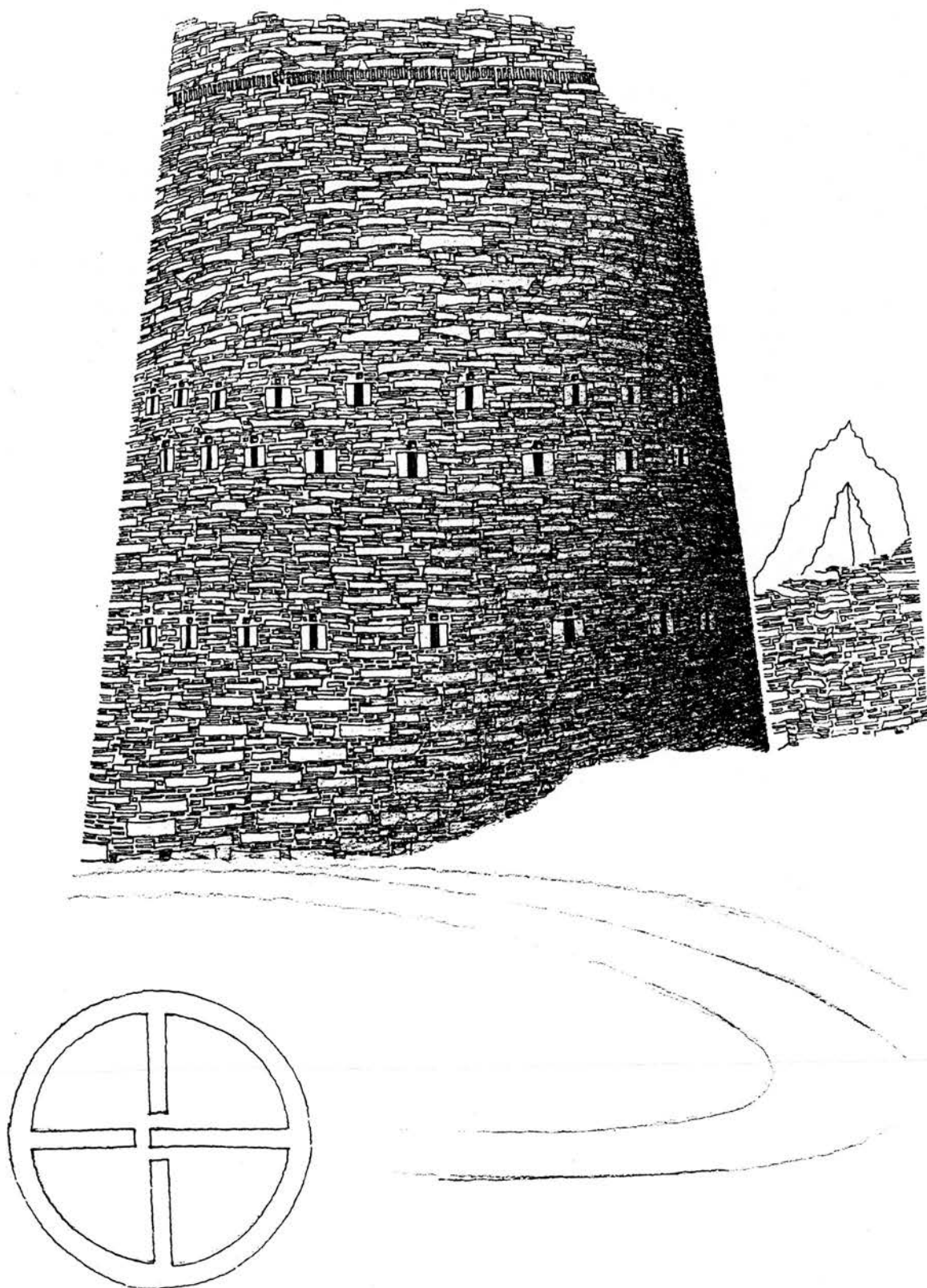


Figure 8.17.

A spacious round tower in Wadi Qarada , (top) side view, (bottom) a plan. 323

These towers, owing to their size and design features, are similar to towers in the isolated mountain of Faifā in the lowlands which have been described by Philby (1976, 497) :

The circular building tapers from a broad base to a somewhat a narrower roof. The single large ground-floor chamber is roofed with clay over rafters, with an aperture at one corner giving access to the next floor by a ladder or clay steps jutting out from the wall.

The tower described here is locally called *mabrūm*. The term is derived from textile terminology and means (al-Bustānī, 1987, 37) an interlaced rope which decreases in width as it goes up. However the floor apertures and the use of projecting stone slabs or mobile ladders in vertical circulation are similar features to those of watch towers in the highlands.

It is a residential tower and this explains its spaciousness :

The second and third storey chambers, the living rooms of the owner and his family, are only partly roofed over in such a way that both have access to air and light, to say nothing of the rain.(Philby, 1976, 497)

The round form of the tower corresponds to the outdoor climatic conditions:

But the peculiarity of this arrangement is enhanced by the fact that the two rooms open in different directions, presumably to allow the occupants to use either at choice according to the weather conditions of any time or day. For instance, if the sun is shining into the top room the lower one is in shade; if the rain is beating into one the other remains dry.

The orientation of these towers to more than one side is similar to the orientation of the round watch tower of Wādī 'Ushrān to the water channel and the fields. The building of spacious round residential towers in Faifa indicates that the spacious round towers of Wādī Qaraḍa were probably used as residential towers and were provided with loopholes as a defensive measure.

Round towers versus square towers in Arabian vernacular architecture

Before concluding this chapter a brief statement must be made regarding round towers. Round towers like those described in Chapter Seven are older than square towers. As Ucko says (1972, 29) :

" Rectangular structures replace circular ones through time in many archaeological areas around the world " .

This might suggest that circular round towers like those of Wādī Qaraḍa are older than rectangular or square towers in other locations of the highlands. The survival of round towers is partly attributable to their structural features. These towers have certain structural advantages over square and rectangular towers . They are thin. They do not exceed three meters in diameter. Their walls reach one meter or more in thickness. They do not carry loads of humans and furniture as do square and rectangular towers.

The problem of connecting the four walls of square and rectangular towers is avoided in round towers, for the circular wall of the round tower works as a compact rubble mass of stone that supports itself, and the loads are divided evenly. They can be built from within and their shape allows them to use undressed stones in their walls as the wall rose. There is, thus, no need to trim stones or to find partially dressed ones. This of course makes them much quicker and cheaper to build. As a result, round towers are easier to build and harder to penetrate than square or rectangular towers. Causing them structural damage is also more difficult.

As these towers are older than square towers, they correspond to an older social practice, namely the partial occupation of villages:

" Circular dwellings tend to correlate (at a statistically significant level) with nomadic or semi-nomadic societies; rectangular dwellings tend to correlate with fully sedentary societies (although numerous exceptions occur) ". (Ucko, 1972, 30)

In the light of this statement, the spacious round towers attached to other structures in the villages of Wādī Qaraḍa are typical of a semi-nomadic society, and indeed the people of the highlands are used to spending summer in their villages as farmers. During the winter they desert their villages for the warm lowlands of Tihāma. This is a common practice across villages of the highlands, and it has resulted in a similar architectural language in both parts.

Conclusion

Watch towers (King, 1976, 26) are landmark features of the physical landscape of the highlands. They are built to guard property. Unlike grain and defensive towers watch towers are always found isolated in the landscape. Owing to their isolation in the landscape and to their vertical shape, these towers are a genuine indication of insecurity.

Duct watch towers have similar features. They are substantially smaller than grain and defensive towers because they are occupied by fewer people. They are always built outside their villages on high ground to command views over the surroundings. Although the ducts and the entry points to these towers, as in grain towers, are oriented towards the fields they are also oriented towards other watch towers, to their villages and to areas which seem most threatening. Judging by the watch tower of al-ʿAin village, square watch towers are similar to defensive towers. They have one single space in every floor and ropes are used for climbing through floor apertures.

The entry points to these towers are their most distinctive features, and are designed to deny attackers the chance of invading the towers. The unusually small size of the entry points indicates that these towers are also used for refuge. Only one man at a time can go through these holes. Their small size does not allow the use of ladders for climbing. This indicates that local warfare consist of fast raids carried out by a few hostile tribesmen.

Round watch towers are hollow inside. They are climbed by using ropes which are provided inside or through wood pegs inserted into the walls. Across the highlands round watch towers are exclusive to the territory of the 'Asīr tribe. This is a result of the local geology which provides stone suitable for building round walls. But the isolated mountains of the lowlands are full of round towers. Although these towers are residential their location at the summits of their mountains make them defensive and watch towers.

THE RESIDENTIAL DUCT TOWERS OF MŞANNIF, AL- ‘UKĀS VILLAGE, AND THE TWIN TOWERS OF WĀZ‘I AND ‘AZĪZ

Introduction

In this chapter three residential duct towers are under discussion. Each tower represents a different physical and cultural context. The first example is a twin tower in the village of Şayyād. The second tower is attached to a low-rise structure in the village of al-‘Ukās. The third example is another twin tower in al-‘Azīza village. All these towers are in the south section of the highlands. Other towers similar to the third tower are also included in this chapter.

The tower of Mşannif in Şayyād village

The village

The village (figure 1) comprises twin duct towers, a number of composite and stone low-rise houses, the village mosque and a public compound. The prevalence of low-rise houses, which have been built in recent years, indicates that the village is of recent origin. This is supported by the absence of newly-built watch towers and the scattering of the village houses. The village is occupied by a nuclear family of the Banī Mālik of ‘Asīr. The skyline of the village is dominated by collapsing old stone towers.

The twin duct towers are oriented, as revealed by the way the ducts face eastwards,

towards the public compound, the village mosque, and the fields. Although the two towers are identical in size, in external features, and in internal organisation, they are occupied by two different families. Therefore the resemblance of the two towers is not based on familial ties.

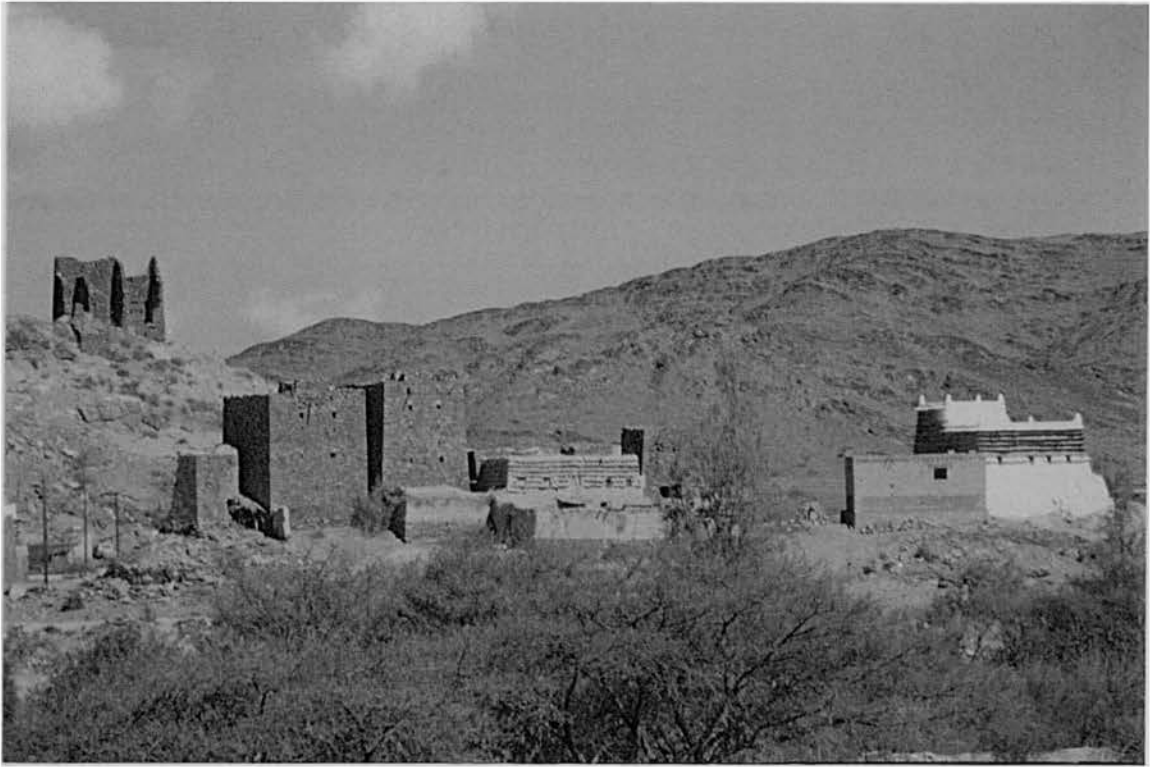


Figure 9.1.
The village of Şayyād from the west side.

The tower

Seen from the outside, the southern tower maintains a low profile. The tower is bare of articulation or ornament. The duct of the tower ends up with a stone slab known as *şafîf*. The tower has no finials. The main entrance to the tower has no paint nor decoration. The windows are not marked by white quartz. These same features apply to the other tower.

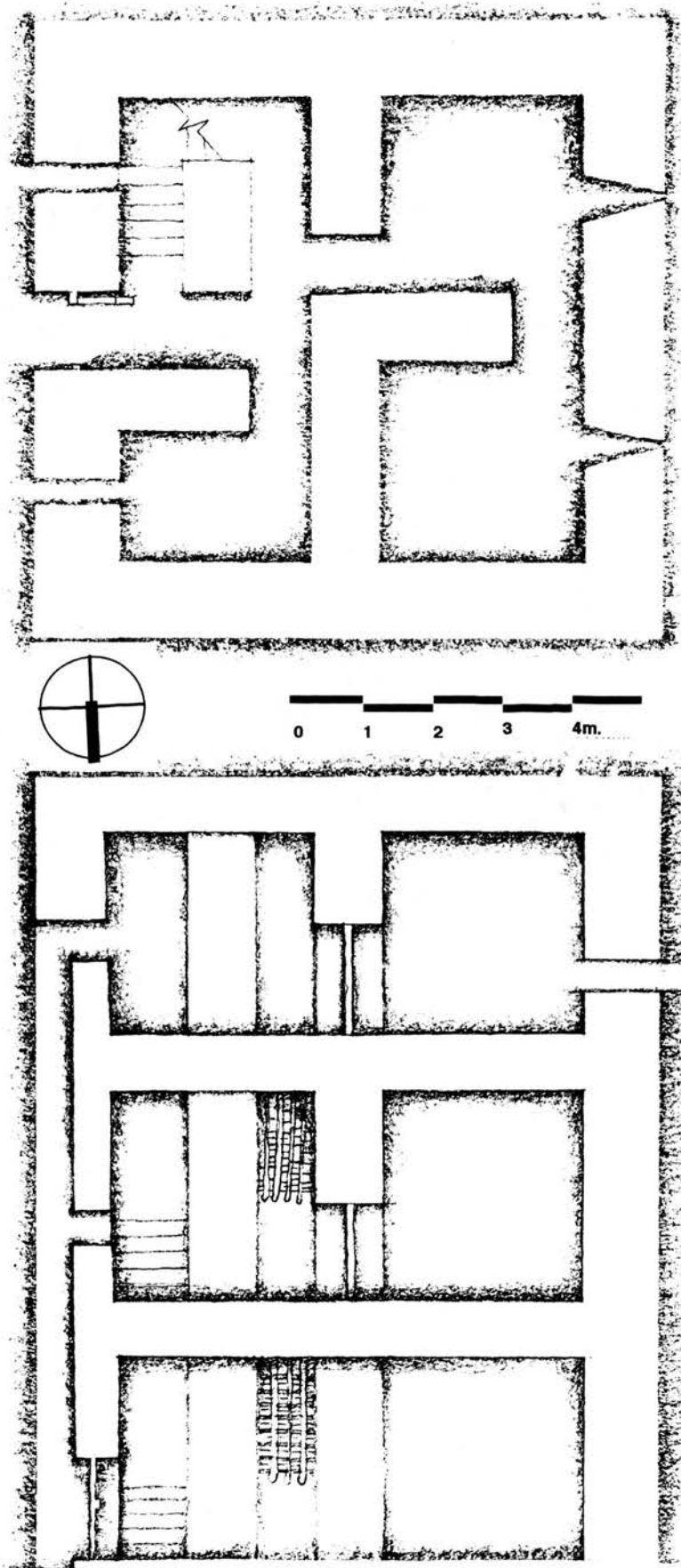


Figure 9.2.
 (Top) the ground floor plan, (bottom) a section,

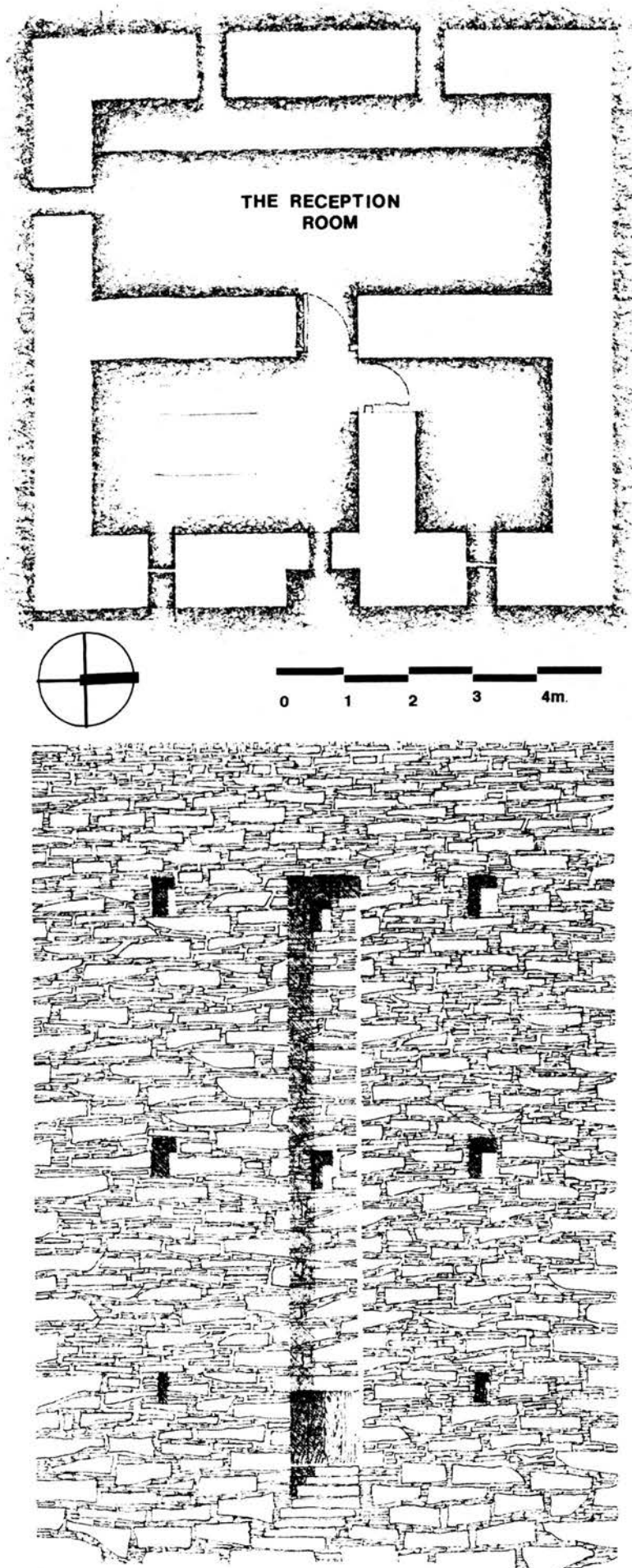


Figure 9.2.
top) the third floor plan, (bottom) the main elevation.

The tower (figure 2) has three floors. Each floor is divided into four parts. One part is occupied by the staircase, while the others are used in different ways. On the ground floor, the rooms are used to shelter a cow, to store agrarian equipment, and as grain chambers. One of the rooms on the second floor is used as a family gathering room (*muqahwa*). The other two rooms are used for sleeping. The third floor has two rooms, one of them being the biggest room in the house and covering the entire span of the floor. It is used as a guest reception room (*majlis*), and is provided with a bench (*dabab*). The room faces west, as revealed by the two windows that light it. Another window is found in the wall facing the south side. From the north, the room is sealed. The other room on this floor is used as a guest dining room (*muqallaṭ*), or as a sleeping room for the occupants.

The tower is called Mṣannif. It is not the only tower in the area that has this name; there is another tower called Mṣannif built by Abū Nuqṭa, a former chief of ʿAsīr during the period 1801-1815 A.D. (Āl Saʿūd, 1989, 56) in the village of Ṭabab, which is twelve kilometres west of Ṣayyād village. This tower is of the duct type and is larger than the residential tower of Ṣayyād. It is also decorated with white quartz and its finials are whitewashed.

The use of the same name in both towers indicates that small and newly-built towers, like the tower of Sayyad village imitate older and larger towers, like the tower of Mṣannif in the village of Ṭabab, by embracing their names. By calling the newly-built towers after older ones, the local people think that these new towers will bring them the same fame, power, wealth and good luck as older towers have brought to their occupiers.

The tower of al-ʿUkāṣ village

The village

The village is ten kilometres Northwest of Abha. The name of the village needs some explanation. The village was named al-ʿUkāṣ because the people of the village belonged to the Banī Mughaid, a sub-tribe of ʿAsīr. The other villages on the water channel of ʿUshrān are occupied by people who belong to ʿAlkam, another sub-tribe of ʿAsīr. This is the only village that belongs to the Banī Mughaid. The root of al-ʿUkāṣ is *ʿakasa* which means the opposite. Therefore the village was named al-ʿUkāṣ because the people of the village violated the tribal laws by dwelling in an inappropriate location namely the territory of another clan, ʿAlkam.

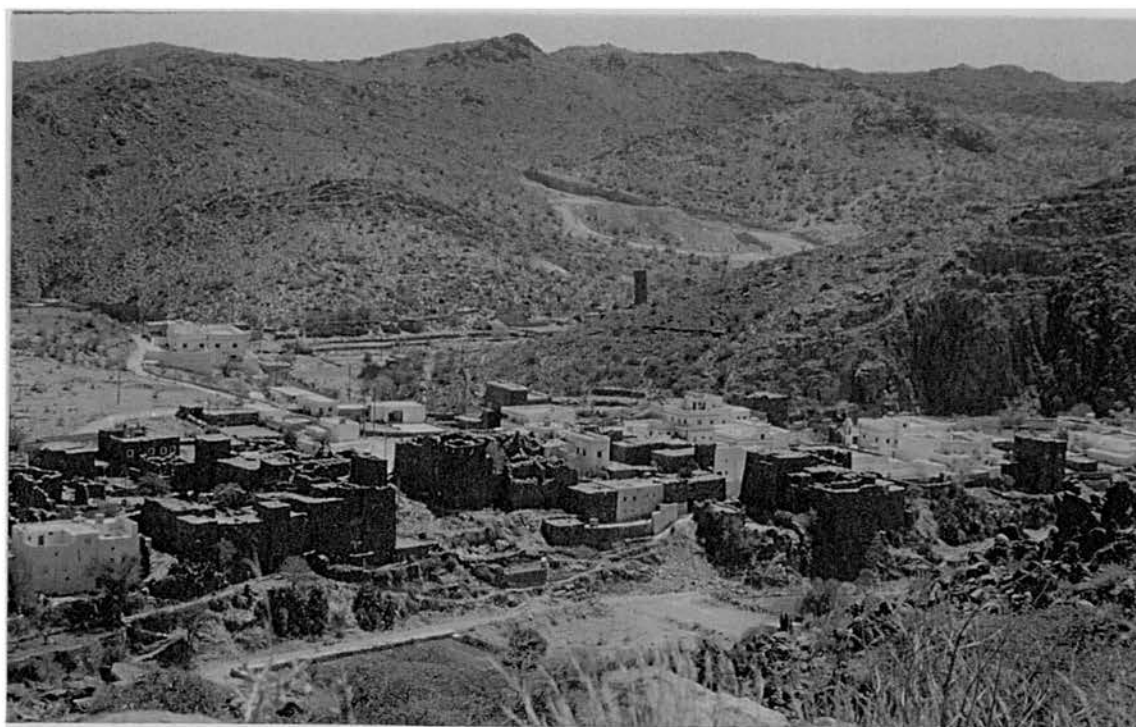


Figure 9.3.

The village of al-ʿUkāṣ from the west.

The village (figure 3), which is built in alongside the water channel of ʿUshrān, is surrounded on all sides by hills, and round and square watch towers are

built to protect the village and the fields. These towers are free-standing. Others are engaged in compact small villages, now in ruins. Some towers are flanking the village, others are beside the fields.

Although the location and the orientation of the village are based on climatic reasons, to maximise heat gain, they also comply with the circulation requirements of the villagers. Building the village close to the fields and alongside the water channel saves time when people are moving in and out of the village. This reduces the risk posed by other tribesmen and looters to the village population involved in farming. Unlike the villages of al-Makhaḍ, or al-Sūda, where the residents of these two villages descend to the lowlands of Tihama in summer, this village is not built close to the escarpment. For this reason, it is permanently occupied.

The towers

Unlike stone compact villages in zone A of the highlands, which are built of low-rise houses, this village is built of compact stone towers. The village (figure 4) is divided at the centre by the public compound (*al-muraḥḥab*) into northern and southern sections. The north part of the village (figure 5), now deserted, is older than the south part, which is still partially occupied and is smothered by newly-built concrete houses.

Although the towers of the north part are fully engaged on all floors, and are densely packed, they are not linked inside, on any floor, by doors, or by any other means of access. Only at the top of these towers do people establish physical contact. The roofs are used to circulate and to exchange news and household items.

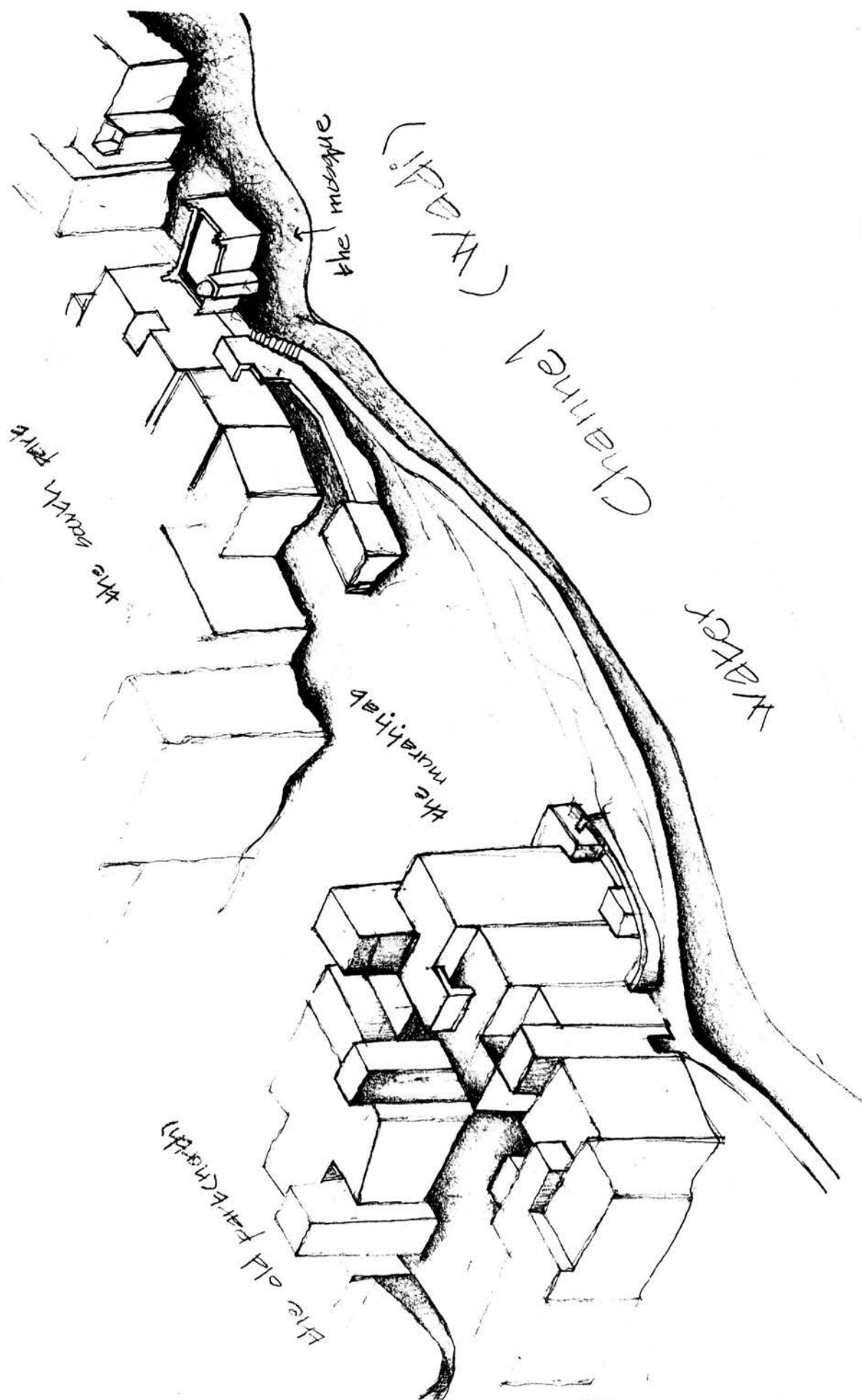


Figure 9.4.
The village of al-'Ukās and its major features.

The towers are provided with narrow windows at the lower floors, indicating their usage as grain rooms, or for sheltering flocks. Larger windows are provided in the upper floors, indicating their usage as living rooms. Some of these windows are marked by white quartz. Others are framed by thin bands of whitewash.

Unlike other villages in the southern section of the highlands, this village is not dominated by a single grain tower. Each villager stores his grain inside his tower-house. Nor is the village dominated by a single defensive tower, like for example the village of al-Makhaḍ. The tower-houses, as noticed by Cornwallis (1976, 15), are used for defence and refuge.

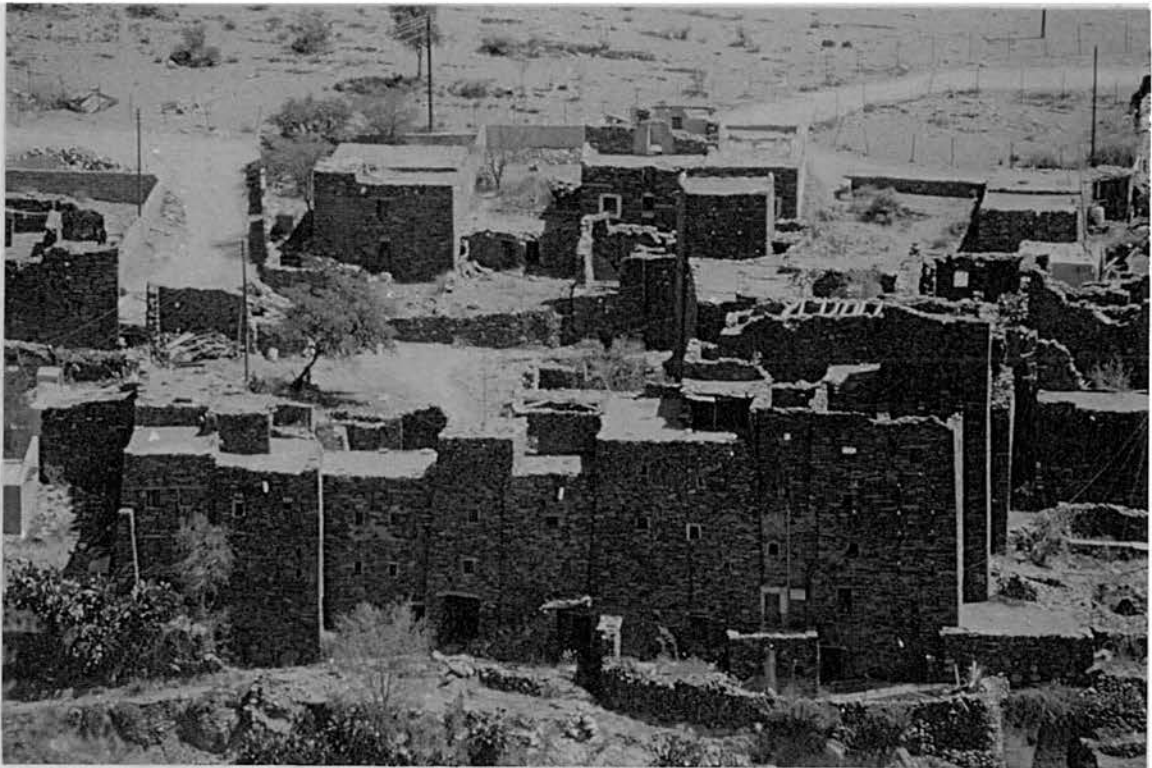


Figure 9.5.

The old part of the village.

These tower-houses are visually linked to the free-standing watch towers surrounding the village from the north, east and south sides. The guards occupying these towers warn people involved in farming of potential risks, such as fast raids by hostile tribesmen, or floods, to take refuge in their tower-houses.

The pedestrian network

The village is penetrated (figure 6) at ground level by a circulation network of which some parts are open to the sky while others are covered by towers. As the network is surrounded and covered by tower-houses, walking through it is similar to travelling through neighbouring valleys defined by mountains. The towers open into the west side of the village alongside the water channel. The walkways are used heavily as the main thoroughfare for the people when they are coming from or going to the fields and grazing lands.

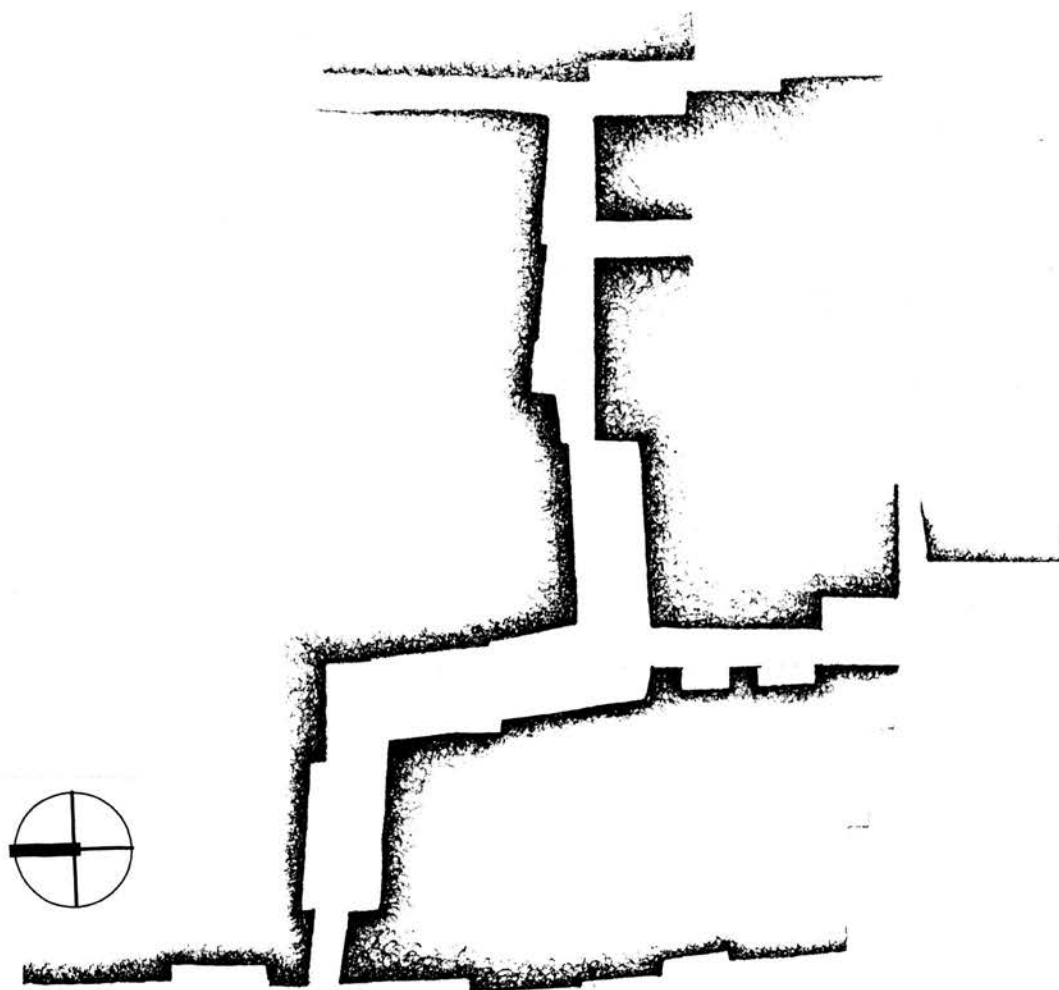


Figure 9.6.

0 5 10 15 20 25m.

The pedestrian network inside the village.

The walkways end with gates (figure 7) that have no doors. The reason for this, according to locals, is to facilitate the movement of the people and their flocks. Had gates been provided with doors, people would find it difficult to move when carrying baskets and unthreshed grain , or when carrying equipment used in the fields. Doors would also prevent donkeys, cows and camels from passing through the gates.



Figure 9.7. a gate terminating the pedestrian network inside the village.

Spaces alongside the walkways (figure 8) are used as places for grinding. It is in these recessed spaces that women grind the grain . After grinding, the grain is put in baskets and is carried inside the towers, where each tower is provided with its own grain chambers. Surplus grain is stored in underground granaries (*madāfin*), which are kept unmarked, to avoid their destruction in case of war.

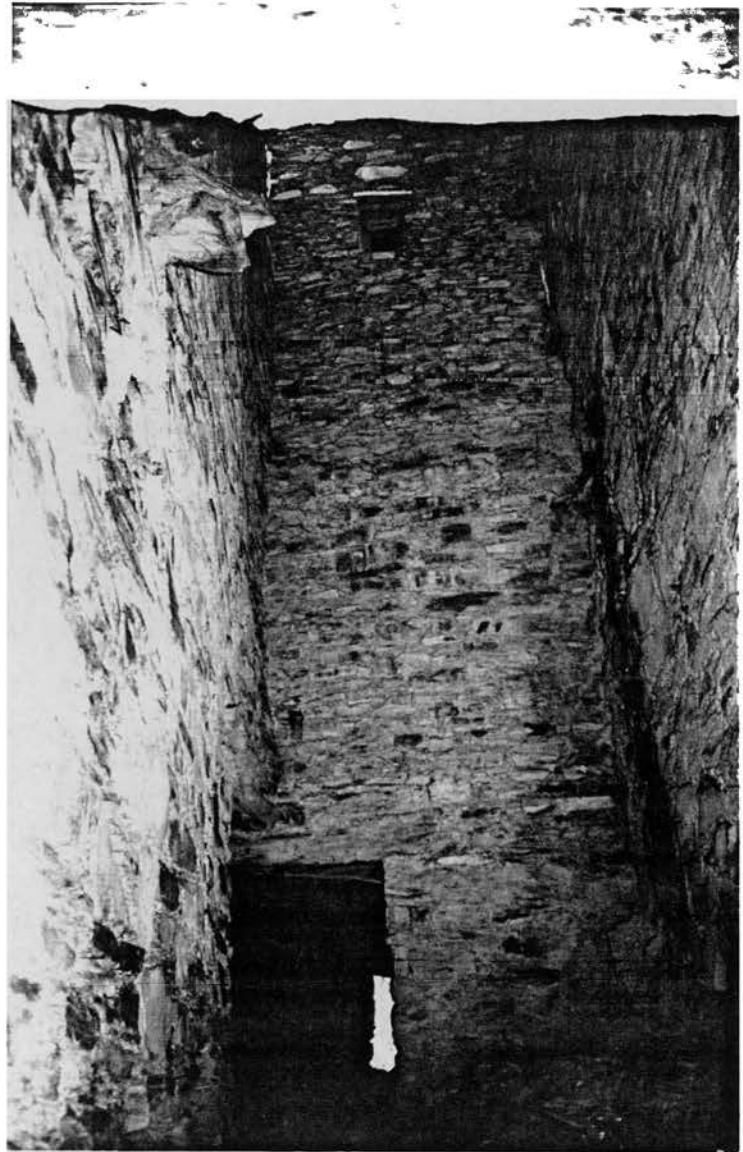
The network is also used for defensive purposes. When the village is invaded the adult people of the village hide in these spaces alongside the network and mount surprise attacks against the invaders. From the top of these towers women and children

defend themselves against attackers by dropping stone missiles or boiling water from the few windows which open into the network.

The mosque

The village mosque is attached (figure 9) to the southern part of the village. From the north the mosque is bordered by the public compound. Like other mosques (figure 10) in the region, it has a courtyard (*ṣaḥn*) and a prayer room which is interrupted by wood columns (figure 11) that support the roof. The lower part of the wall is painted green as in the mosque of al-Makhaḍ village. The mosque is the only building in the village which is partially veneered from the outside. It

Figure 9.8. a view of the walkways.



is also the only building that has finials on its four corners. The most recognisable feature of the mosque is the truncated conical dome crowning the *miḥrāb* . Unlike the mosque of al-Makhaḍ village, this mosque has no minarets.

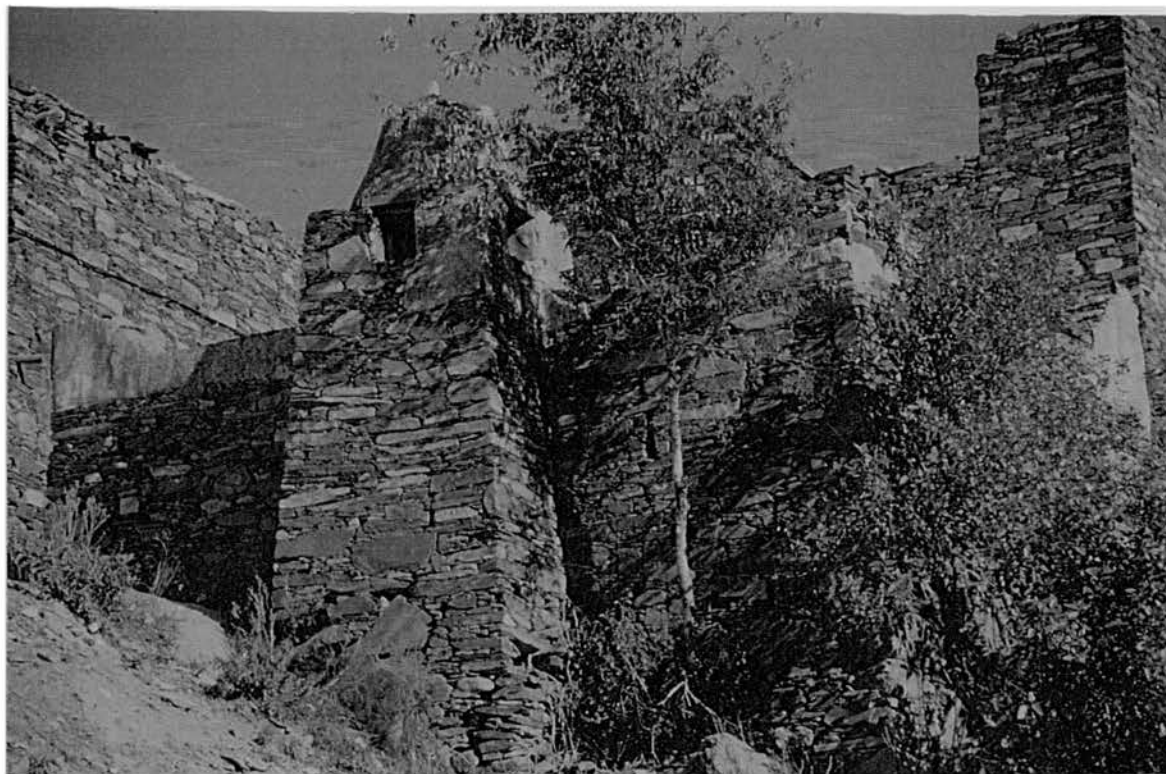


Figure 9.9.
The Northwest side of the mosque



Figure 9.10.
The courtyard and the conical dome above the *mihrāb*.

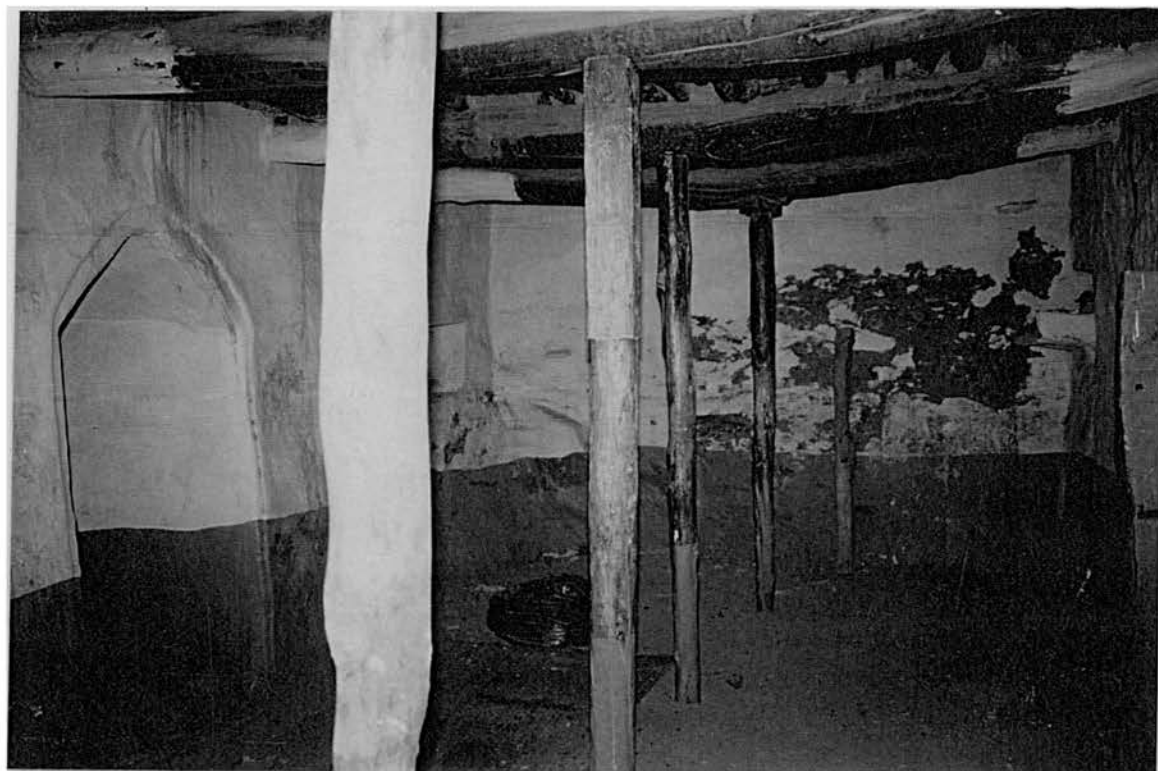


Figure 9.11.

The prayer room of the mosque.

The duct residential tower

The tower in figure 12 is the only duct tower in the village . It is located at the extreme southern end of the village. Facing west , the tower is physically attached to a low-rise structure on the north side. The orientation of the tower is linked to the water channel, a neighbouring water-well , and to the fields on the west side of the water channel. As discussed in Chapter Four, the tower is provided with the duct to provide structural support. The duct is also used as a runnel for stone missiles dropped by the occupants on top of invaders.

The tower has four floors (figure 13) . Each floor is divided into four rooms in which one room is hollowed out and used as a staircase. The other three rooms are all

used differently. On the ground floor the rooms are used to shelter cows, which are few in number and agrarian equipment . The rooms of the second floor are used as grain chambers. On the third floor is the reception room, and two other rooms used as bedrooms by the male members of the family. On the fourth floor is the kitchen (*al-malhab*) , a living room, and a bedroom for the female of the members family. This floor has access to the sun and the outdoors through the partially-covered terrace on the east side of the tower.

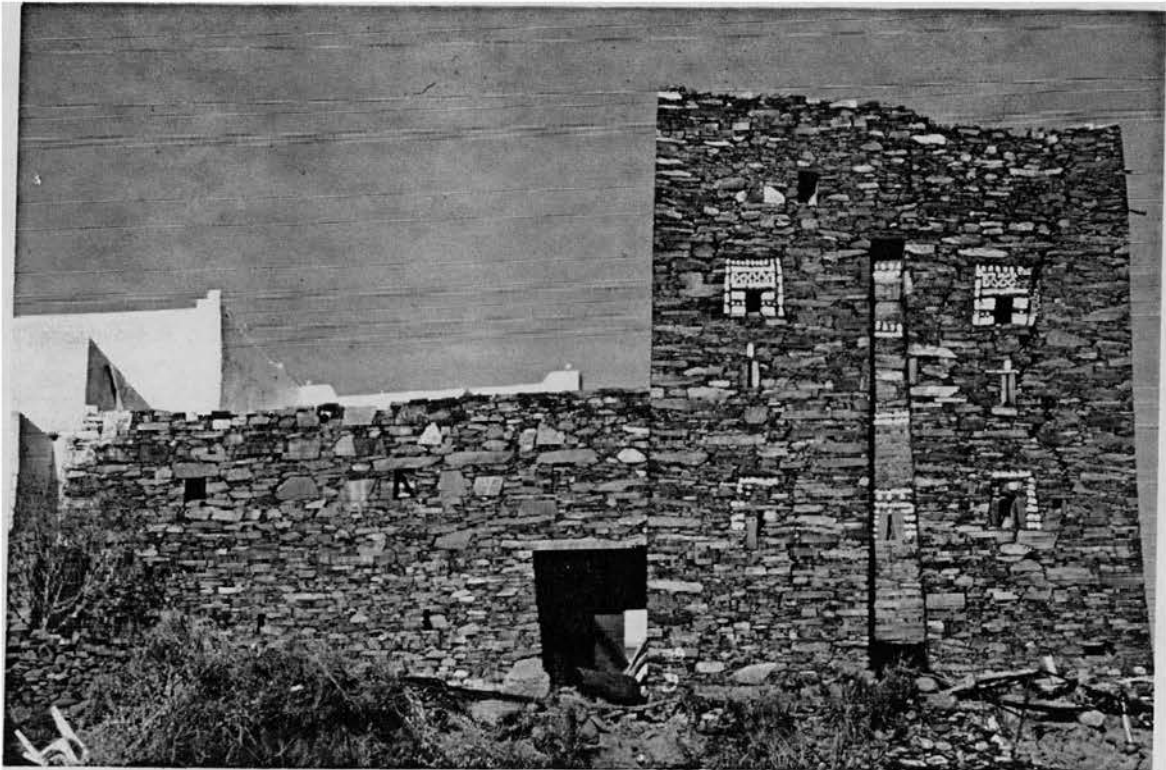


Figure 9.12.
The west facade of the tower.

Although the tower is physically attached at the north side to a two-storey house, the tower is not linked by doors nor by other means of circulation to the house which has two floors. On the first floor is an entry hall. To the right of the hall is a large room, used probably as the guest's reception room. To the left of the hall are two rooms used as guest's dining room and bedrooms. The second floor has the same number of rooms with one room at its southern wall touches the tower.

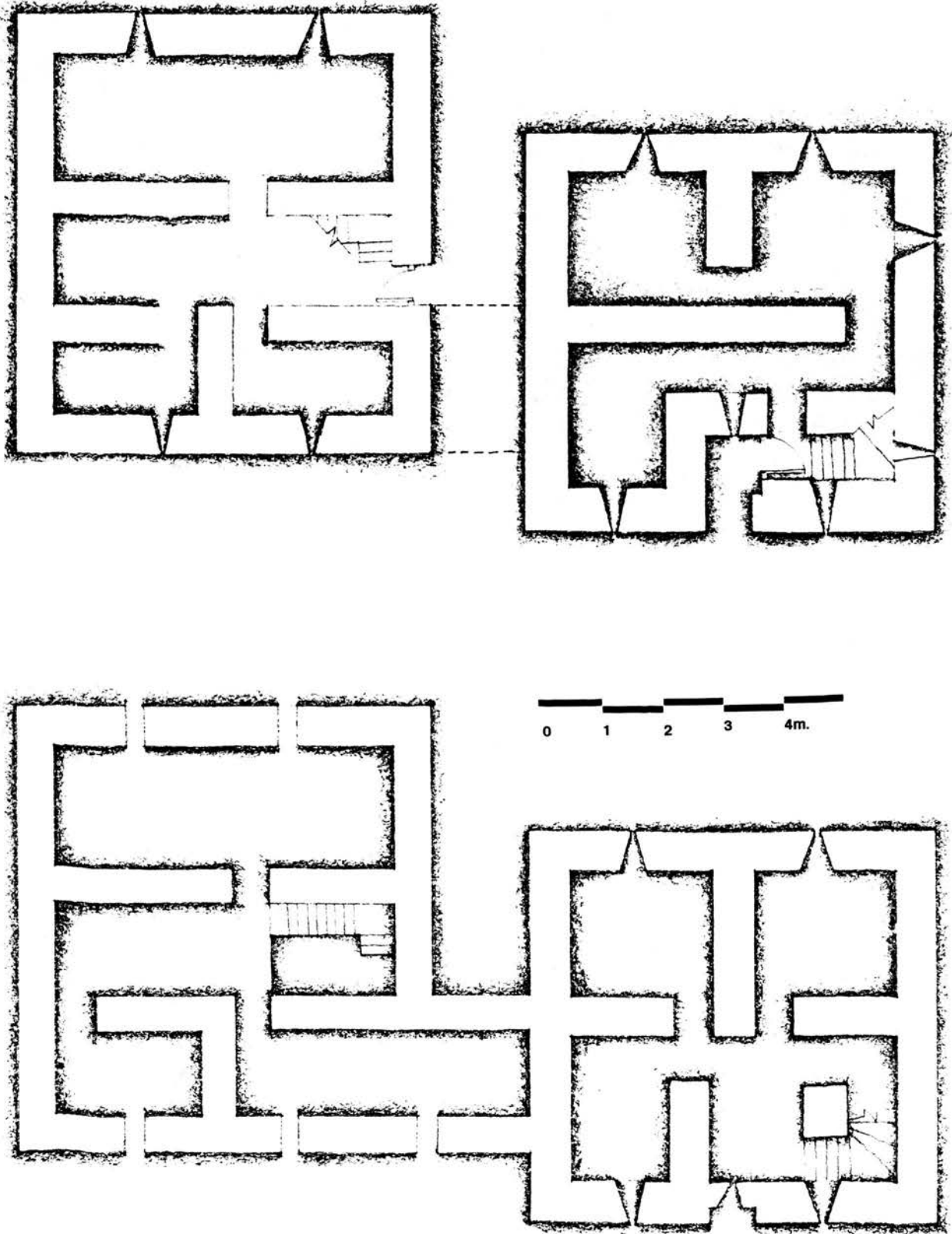


Figure 9.13.

Top) the ground floor plan, (bottom) the second floor plan



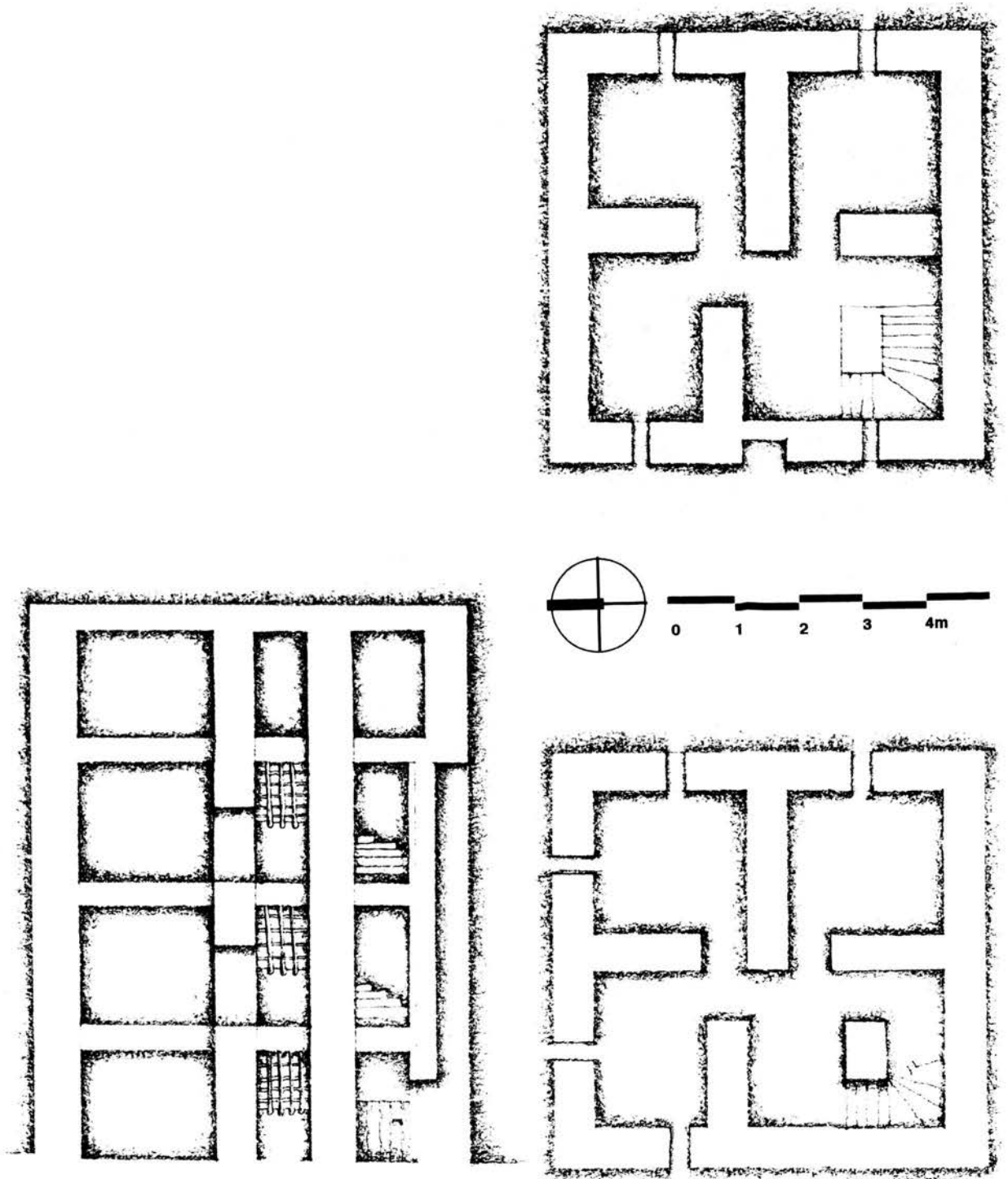


Figure 9.13.

(top) the fourth floor plan, (bottom) the third floor plan and a section.

Although the tower is similar in the functional organisation to other towers in the highlands, it has unfamiliar features. One of these is the location of the main entry door. Unlike other duct towers of the highlands, where the main door is at the centre of the main facade, the door of this tower is pulled back and tilted ninety degrees. This feature is purely defensive as indicated by the loophole protecting the entry door in the centre of the duct. If an enemy is attempting to invade the tower, the occupier would stab him with a javelin, or would shoot him with a rifle through the loophole, being protected inside the tower.

The second feature is the usage of fake loopholes (figure 14), some of which are decorated in carpet patterns. Although this is found in some towers, for example in the defensive tower of al-Makhaḍ, its visual effect in this tower is more noticed. Judging the size of the tower, by the number of the decorated loopholes, the tower must have six floors. These fake loopholes and their decoration evoke a sense of grandeur to the tower.

The third feature is that the tower lends itself to two opposite sides. The front facade of the tower, like those of other duct towers, is the one comprising the duct: the west facade. But it is treated as a back facade, as can be detected from the inarticulate punctuation of white quartz. To the contrary the east facade has been decorated with more refined triangular and carpet patterns of white quartz which indicates the significance of this side.

This feature is based on the requirements of privacy. The front facade of the tower, namely the west side, is the one most exposed to the people of the village in their daily journeys to their fields and grazing lands. Therefore, when the occupants of the tower carry out their various activities, they require privacy and seclusion from the public. These activities take place in the back yard to the east side of the tower. 345

The fourth feature which is probably the most unfamiliar, is the absence of doors from the tower. Only at the main entry point to the tower , and at the entry to the yard, do we find doors. The rooms inside the tower have no doors. There are no signs suggesting that doors have been removed. The linkage between the rooms is made through openings. The conventional notion of doors -wooden elements used to control access to rooms- has no relevance to this tower. This feature is found in the pedestrian network of the village and in the low-rise house adjacent to the tower. The reasons behind this feature, are at the moment unknown, and will be pursued in the future.

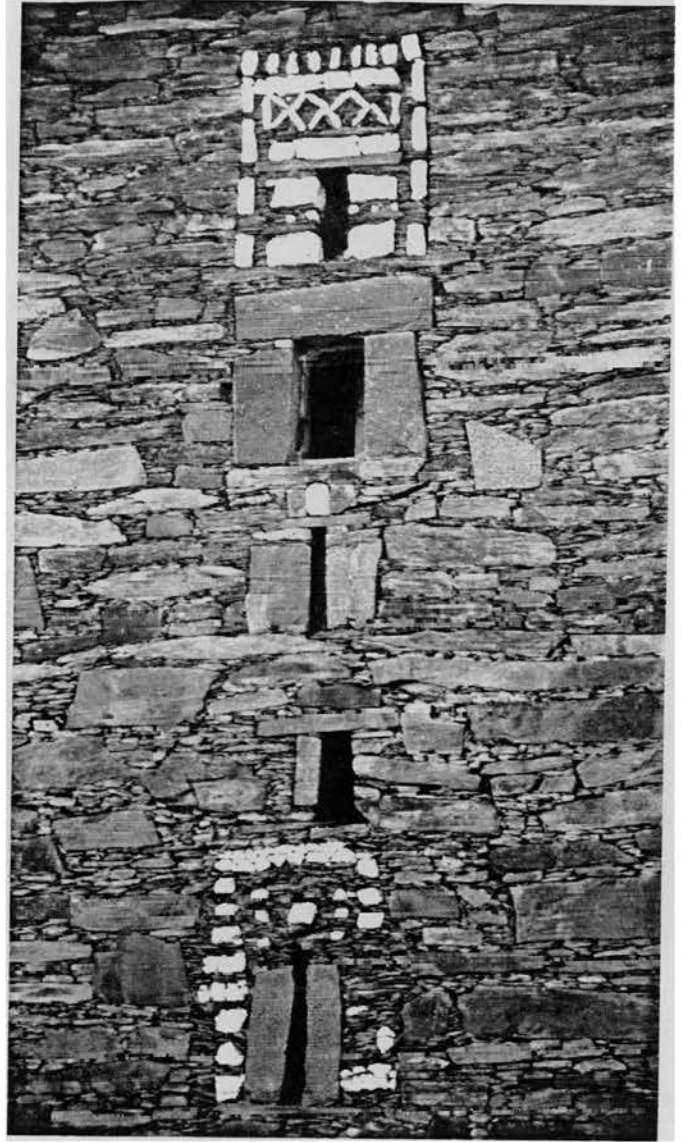


Figure 9.14. Fake loopholes and decorative motifs

The twin residential towers of Wāz i‘a and ‘Azīz in al-‘Aziza village

The village

The village of al-‘Azīza (figure 15) is located on the west side of the water channel that has the same name : Wadī al-‘Azīza . It is surrounded on the east , north

and south by grain fields. On the west is a sharply-sloping hilltop. The landscape is covered by the trees of juniper trees (‘ar ‘ar) and other local shrubs. The village is oriented eastward to benefit from the sun's rays and to avoid the cold wind of the Southwest.

Unlike the village of al-Makhaḍ or al Sūda, this village is built of tower-houses. But its layout is not as compact as the village of al-‘Ukāṣ. A considerable part of the village has fallen, but a brief idea of how it formerly looked is possible. The towers are detached, and the village does not have a clearly defined pedestrian network. The walls of the remaining towers lean inward, indicating that they formerly had more than four or five storeys. Some of these towers are unarticulated and are decorated by using the punctuation technique of quartz. Others are veneered or whitewashed.

The towers

Waz‘i and ‘Azīz (figure 16) are the only twin duct towers in the village. The towers, owing to their height, dwarf all other buildings of the village. They are attached together by a passage in the middle called *al-sayyāri*. The north tower is called ‘Azīz and the south tower is called Wāz‘i. Both are named after two sub-tribes of Bani Mughaid of ‘Asīr. Both towers are veneered and, therefore, were denied the punctuation of quartz. The original character of the towers was spoiled recently by bridging the two towers at the top by a concrete slab. According to the present owner, the two towers are identical in their outside features and in the internal organisation. However the tower of Wāz‘i is one floor lower than ‘Azīz. Apart from this, the description of the north tower, ‘Azīz, which is in better shape, applies to the tower of Wāz‘i.

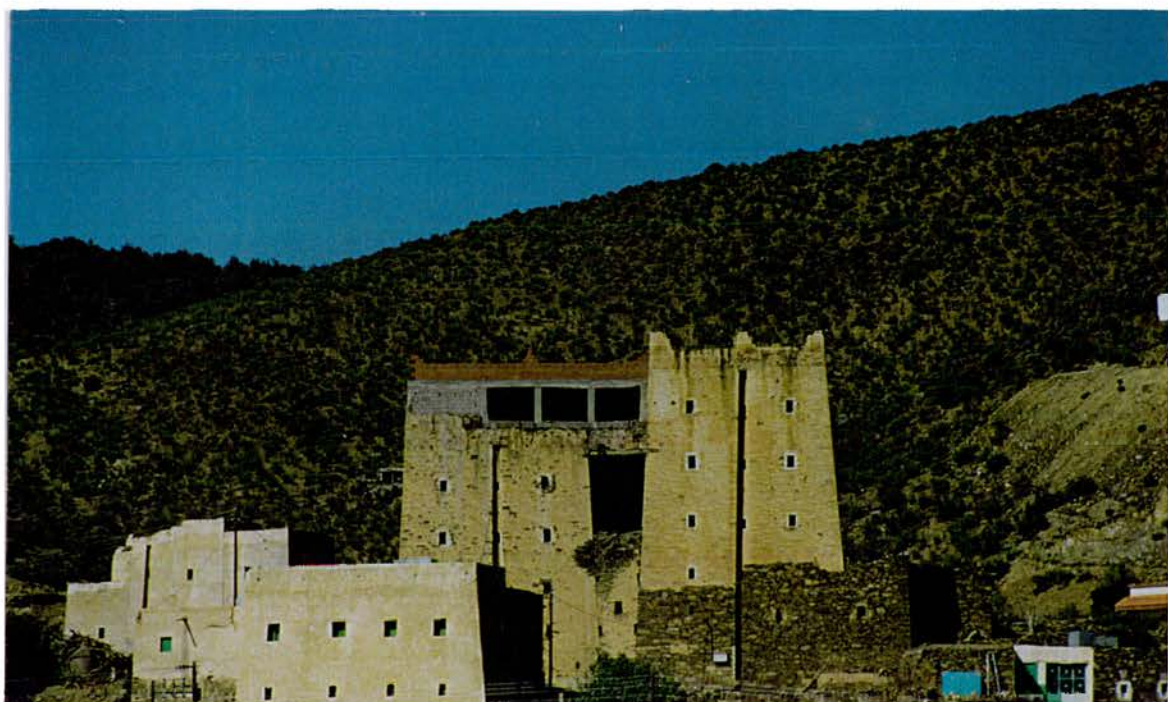


Figure 9.15.

The village of 'Azīza from the east side.



Figure 9.16.

The twin towers of Waz'ī (left) and 'Azīz (right)

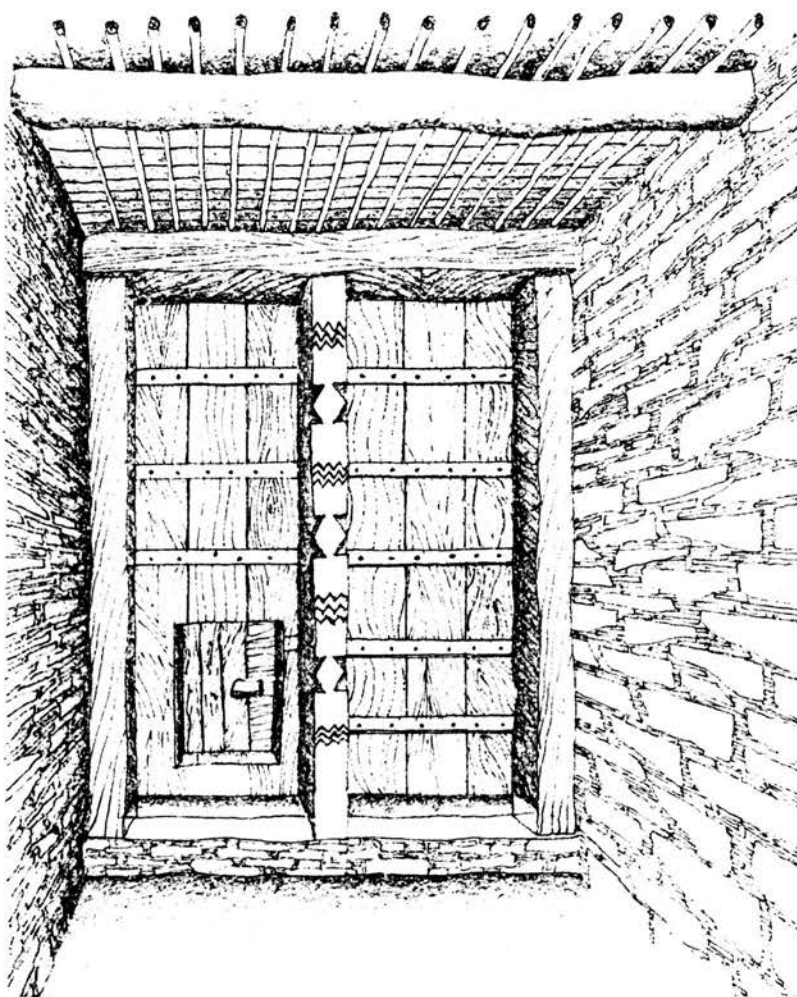


Figure 9.17 The gate of the tower.

The spatial organisation

The main entrance point to the tower is through a large gate (figure 17) called *al-Jāmī* which faces north . The gate opens to a hall called *al-bāsūt* . To the right of the hall is a guard room (*ghurfat al-ḥurrās*) which has a door and a loophole. This room is always occupied by guards. The floor above the hall is used by slaves, servants and guards as their living quarters.

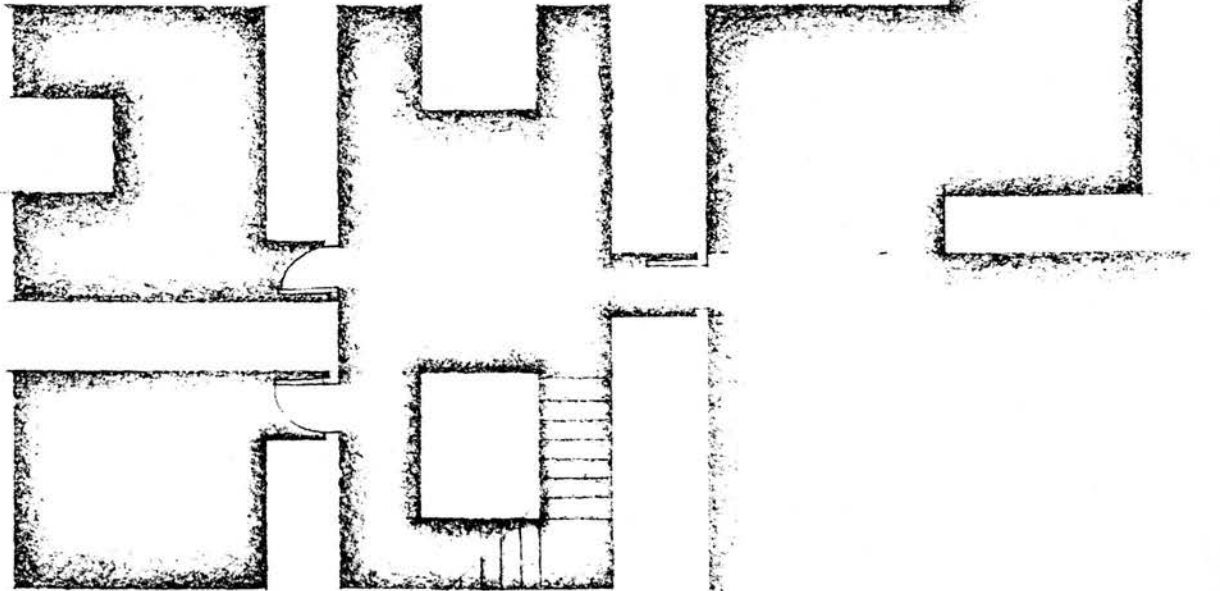
The tower itself (figure 18) comprises six floors. Each floor is divided into four rooms, and one room is devoted to the staircase; others are used differently. On the ground floor, the three rooms are used as a shelter for the horses used by the tower occupants; other horses are sheltered in separate rooms, outside the tower. Each room is provided with an elevated deck (*mithwad*) where hay and lucerne (*birsīm*) are stored as fodder for the horses. On the second floor one room is used as a storage room (*makhzan*) for the agrarian equipment such as the plough (*al-miḥrāth*), and the sickle (*al-sharīm*). The second and the third rooms are used to shelter cows.

The rooms on the third floor are used for grain storage (*makhazin ḥabb*). Of related interest is the threshing yard (*baidar*) on the north and west side of the tower. The threshing yard is as high as the third floor. To minimise the effort of transporting grain, two windows open onto the threshing yard, so that grain, after threshing, is poured loose through these windows directly to the grain chambers.

The three rooms on the fourth floor are used by the occupants of the house. The first room is used as a sitting room (*muqahwa*). Each of the other two rooms is used to store clothes , beds, rugs , and personal belongings. Both rooms are used for sleeping purposes by the male members of the family. This organisation applies also to the three rooms on the fifth floor, which are used by the female members of the family.

The sixth floor comprises the formal reception room (*al- majlis*) which is twice as large as any other room of the tower. As usual, this room gets the utmost attention from the occupants of the house. The room is provided with a stationary bench (*dabab*) that runs alongside the room and is covered with rugs. The floor is covered with carpets bought by the owner from the Hijaz region during his travels. The

The tower of 'Azīz



The tower of Wāz'ī

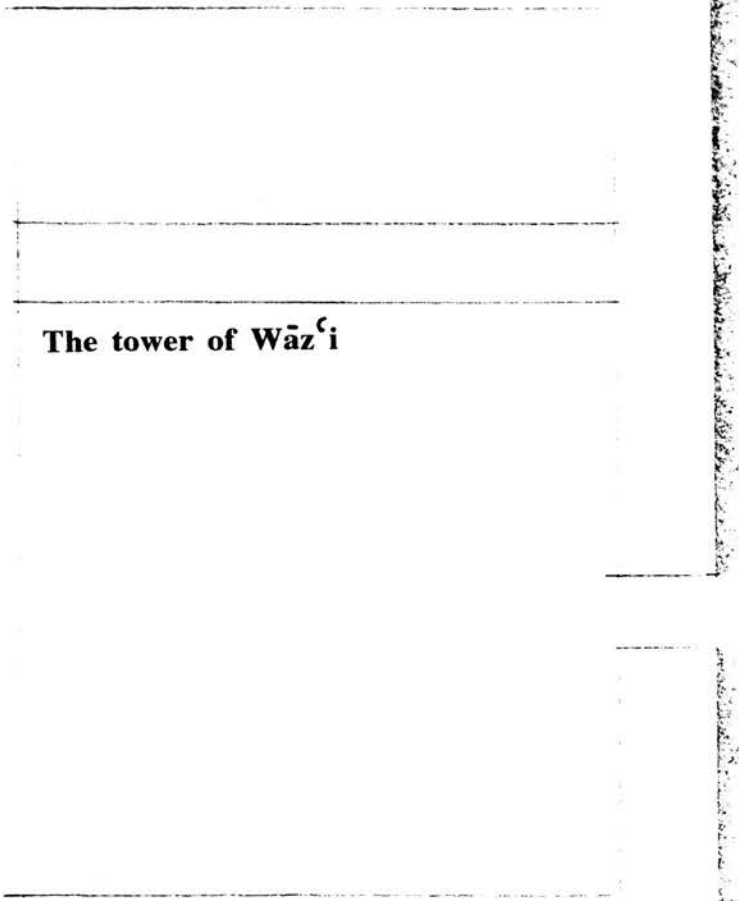


Figure 9.18. the ground floor plan of the tower.



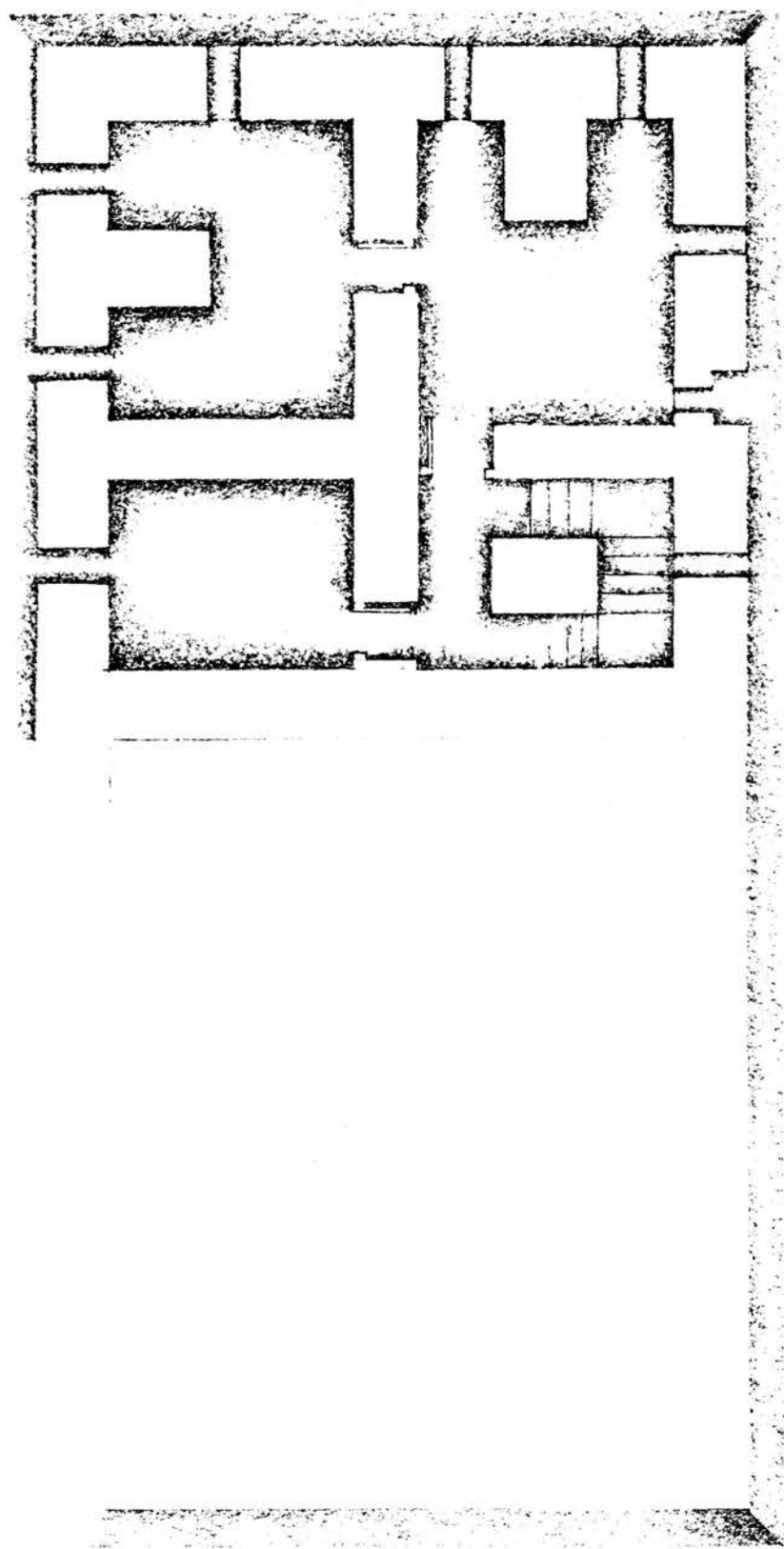


Figure 9.18. the third floor plan of the tower.



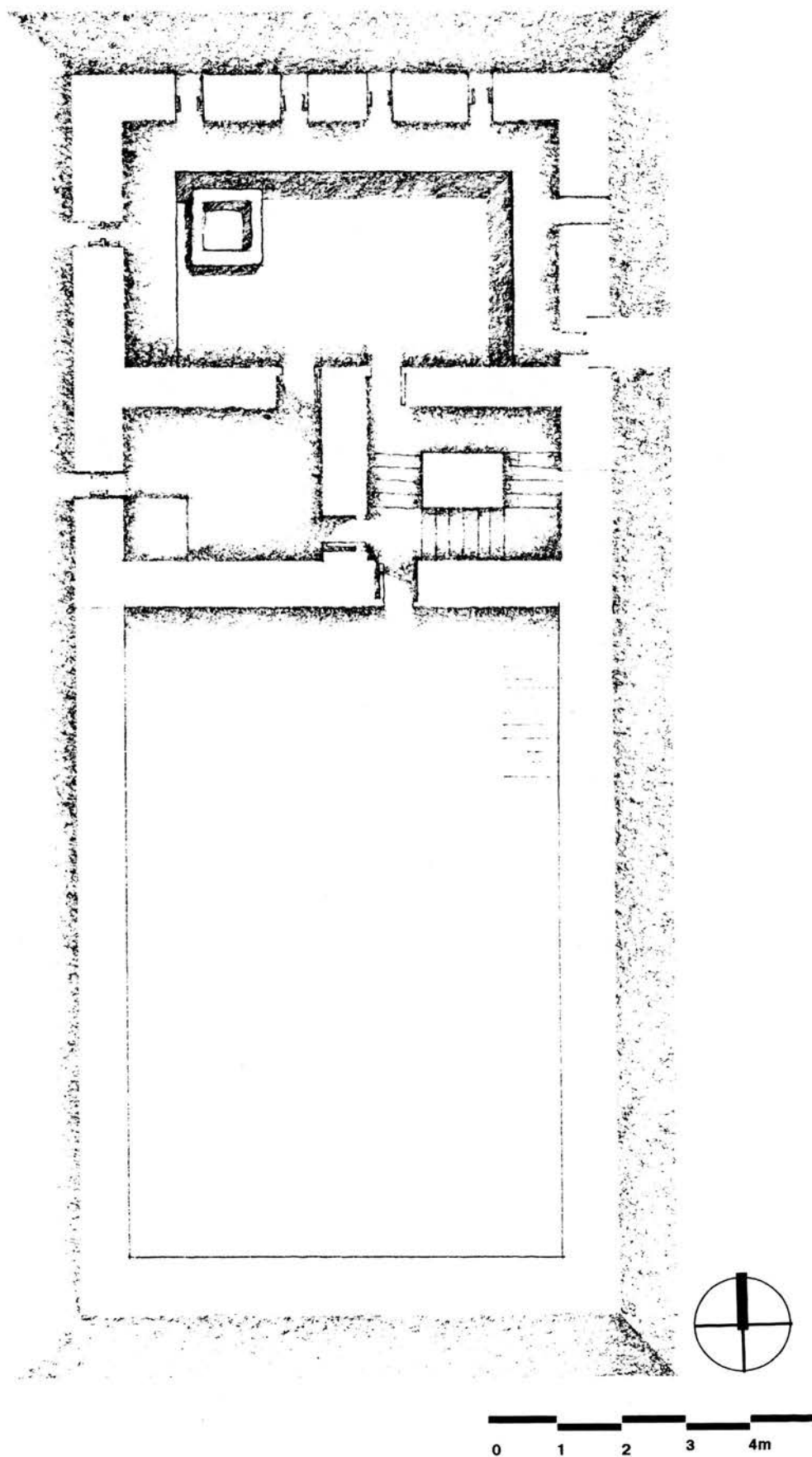


Figure 9.18. the sixth floor plan of the tower

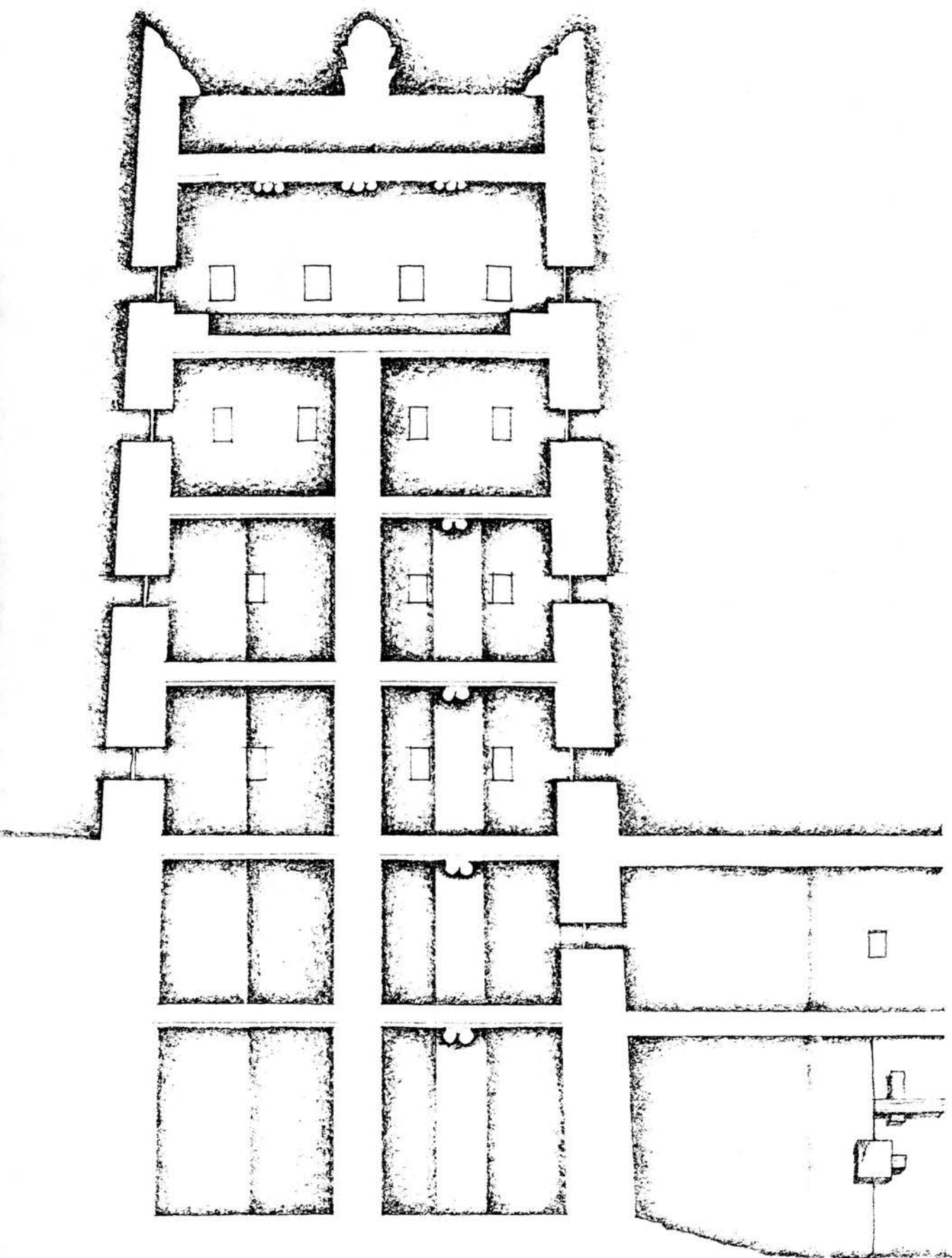
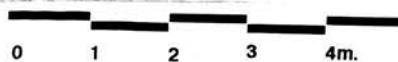


Figure 9.18. a section of the tower



The room is centred around the hearth (*ṣalal*) which is located at the front of the room and is surrounded with bowls used to make coffee and tea.

The bench is highlighted by painting. The lower part of the wall above the bench is painted light green. This is followed by two thin black stripes, which frame the windows and the two doors on the south side of the room. This colourful paint contrasts with the whitewashed walls of the room.

The ceiling of the room is divided into four areas. Each one is carried by three main beams of juniper trees (*‘ur ‘ur*) wood. Above these are secondary beams topped by sticks and a mat of balm trees, brought from the plateau or from the lowlands. The main beams are so painted as to balance the colourful carpet on the floor and the stripes on the walls framing the bench.

The reception room is named *‘Azīz* (*majlis ‘Azīz*) . The room has witnessed significant occasions when the tower was in heavy use. The owner used to entertain people, hold gatherings, listen to the complaints of his people and solve problems. Important gatherings of the clan have always taken place in this room.

The third room on this floor is used as a lavatory (*al-maghsal*) for the guests. The room is provided with an elevated deck and a water container. Water for domestic use is brought up daily from a neighbouring water-well by the female members of the occupying family in canteens made of skin.

The top floor bridging the two towers is used as a kitchen (*malhab*) . On this floor smoke escapes easily. Water is disposed from the kitchen through a superficial

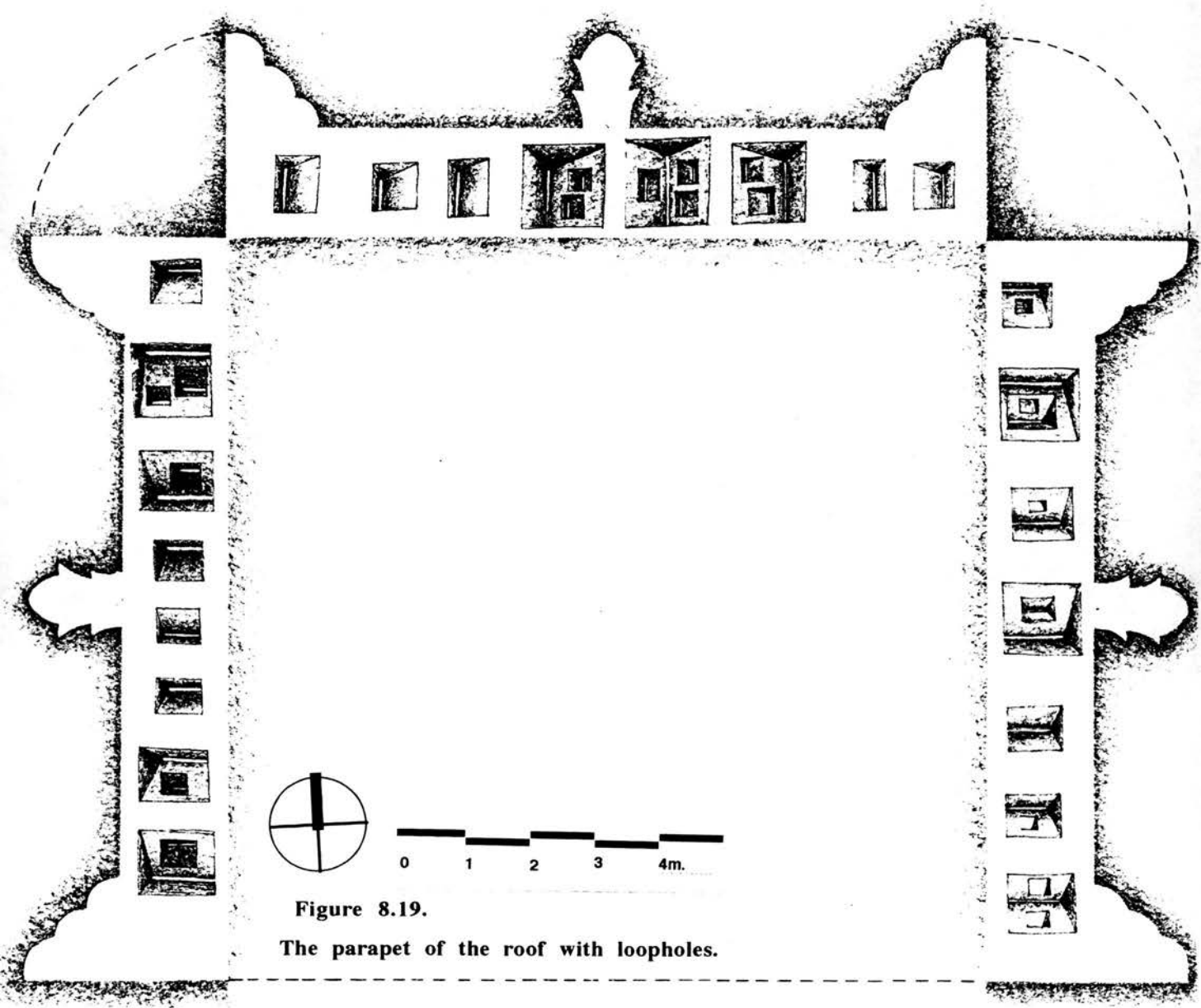
groove (*sarab*) at the west side of the tower. Although the tower is provided with water disposal it does not have a toilet. This is a common feature of residential towers across the highlands.

The defensive features of the tower

Although the main purpose of the tower is residential, it is also used as a defensive tower. This is evident in three features . The gate is designed to withstand damages inflicted by attackers. The door of the gate is made of a lintel (*radm*) supported by two posts . Underneath the post is the door itself, which is made of four panels (*alwāḥ*) of *ar ar* wood. These panels are ringed by five metallic bands (*aḥzima*) which are interrupted regularly by large nails (*kawākib*) that join the panels. The knocker is made of a circular metal (*nahd*) . The door is opened from the inside by sliding a wood locker(*sakkāra*) into the lock groove (*ḍabba*) .The gate has a small door inside it called *farkh*. In day-to-day use, the gate is opened in half, but in times of danger the gate is locked and access to the tower is through the *farkh*. This is a defensive measure to minimise the risk of attack by hostile clans. These features are familiar to other large gates in the region ; King describes a large door in the central section of the highlands:

" Like most large doors in Arabia, it has a smaller door cut into one of its two main flaps. The door is decorated overall with incised floral and geometric designs picked out in red and blue with other colours which have now flaked " (King, 1976, 25)

The height of the tower provides protection for its defenders. Attackers attempting to invade the tower, if they succeed in penetrating the protected gate, and avoiding the missiles thrown at them through the duct ,lose precious time climbing the six floors of the tower and the roof. Defenders inside the tower attack them from the top by surprise, having hidden in the darkness inside the tower.



The roof of the tower (figure 19) is used as a defensive platform protected on three side by a parapet which is punctuated by two kinds of loopholes pointing to all directions. The first kind has one loophole known as *maḍrab* .Others have two, three or four loopholes. These are called *matāris* .In war, the roof is filled with tribesmen taking protection behind these loopholes to watch and shoot their attackers from the top. 357

The structural features of the tower

Owing to the height of the tower which reaches twenty meters (al-'Asīrī, 1987, 24), it becomes important to support it by two buttresses (*bitar*) to the north and the west sides of the tower, as does the buttress that carries the staircase on the east side of the tower. The two buttresses continue all the way up, and they end beneath the formal reception room. As they go up, the two buttresses support the walls and carry the main wooden beams which in turn carry the floors. The walls of the tower lean slightly inward to increase the stability of the tower. This is a common feature of high towers in the south section of the highlands built in the nineteenth and the twentieth centuries as we shall see below.

The social status of the tower's owner and its manifestation in the architecture

In an interview with the present owner of the two towers (al-Asiri, 1987, 24) this is how the owner describes the evolution of the tower :

My grandfather was a wealthy man. He had a lot of money, slaves and horses. When he was arrested by the Turks, and sent in exile to Istanbul, he left forty thousand French currency (*Faransi*) with one of his friends at the port of al-Qunfudha, but this money was swallowed by the sea during a boat journey from al-Qunfudha to al-Hudaïda in Yemen. He used to travel a lot, especially to al-Shām (a term used to describe the north territories of 'Asīr) and to Yemen. During these travels, he used to buy farms and hamlets in Tihāma , al-Sarā , and in Bīsha. (my translation) .

This statement is self-explanatory and gives a clear idea of the economic status of the towers' builder. The next statement describes the process and the means of building the tower of Waz'ī:

He used to live with his family in a residential tower called Zahwān. In 1265 A.H. he decided to build two big towers, but to equip them with new features. He selected the site of the first tower and asked his nuclear family (Āl Zaidi) to supply him with six good masons, and so they did. The building process started and lasted five years. After it was finished, the tower was called Wāzīa after a large nuclear family of the Banī Mughaid, a sub-tribe of 'Asīr .

This statement, too, is self-explanatory. However the tower of Zahwān is named after a high mountain in the south section of the highlands. The following statement gives the time of building the two towers and the amount of labour invested in building them :

"After five years he started to build the second tower. It took him a longer time to build than did Wāz'i. After the tower was finished it was called 'Azīz after his immediate nuclear family (Āl 'Abd al-'Azīz). The time taken to build both towers was seventeen years. About one hundred servants, including women, were involved in the building of these two towers . Horses and camels were used to carry stone and water, and to borrow wood from the neighbouring woodland of Khaish'ā beside the two towers. "

The status of the original owner of the two towers is reflected in the architecture of 'Azīz tower in a number of features. The most important of these are:

the height of the tower

The tower is among the highest stone towers across the highlands (Āl Sa'ūd, 1989,52) and is rivalled only by the towers of Raida fortress and by the demolished tower of Shada described below. To achieve this height , large quantities of stone and wood, and a large labour force, had to be provided at the construction site. Most people of the region could not afford to do this. Only wealthy people can build such high towers.

the name of the tower

The name 'Azīz applies to the tower and its context in a hierarchical system. At the first level, the name is used for the water channel and the village which is called 'Azīza , the feminine version of 'Azīz. The second level concerns the nuclear family to

whom the owner belongs (*Āl ʿAbd al-ʿAzīz*) and which contributes with its labour to build the tower. The third level concerns the tower and the fourth level is at the reception room.

The name "*ʿAzīz*" means " the dear ". This explains the prevalence of the name on these levels. The name brings intimacy to all these levels. The local people feel intimate with their village, with each other, with the tower, and with the reception room. The name is also a sign of unity and is a source of pride for the clan over other clans in the area.

the roof line of the tower

The corners of the roof are marked by four large finials found only on this tower. They are probably influenced by similar finials in Yemen. The contact of the tower's owner with Yemen through his travels, as stated above, is probably responsible for bringing this feature into the tower. Other large towers in the highlands also have untypical finials.

the building materials

Residential towers built of stone are called *quṣūr* (pl. of *qasr*). The word means a fortified palace. Mud residential towers are excluded from this definition. They are called *ḥuṣūn* (pl. of *ḥiṣn*). To be called " a palace " a mud tower must be surrounded with a wall, and protected by smaller towers. Stone towers across the highlands are more highly esteemed than mud or composite towers.

Cladding (*talyīs*) of towers is also a reflection of high social status. ‘Alī (1970, 17) restricts the term "*qaṣr* " to veneered stone towers. The reason for this distinction is probably explained by the visual performance of cladding. A veneered tower has a sharper look than "naked" towers. Stonework of poor craftsmanship is concealed behind the veneering layer.

The towers of Wāz‘i and ‘Azīz belong to a group of towers built in the nineteenth and the early decades of the twentieth century by prominent families in the highlands. These towers are similar in some respects to the tower of ‘Azīz. The most important ones are discussed below. They are briefly discussed according to their dates of construction.

The tower of Nājih

This veneered duct tower, whose name means "the successful", was built by Muḥammad Aḥmad al-Zaidanī , a local chief, in 1801 A.D. (Al Sa‘ūd, 1989, 50) in the town of al-Sūqa, which was a stronghold for the rulers of Asir during the conflict with the Ottoman army. The walls of the tower lean inward, producing a pyramidal shape. The tower is engaged with two other towers named *Umar* and *Khāzim* , now in ruins, in a defence system. The three towers are inside an enclosure, where a water-well connected to the tower by a tunnel, secured the water supply of the towers in times of siege.

The tower has four floors. The ground floor is used as a storage place for weapons. The rooms of the tower were occupied by defenders when the tower was under attack by other tribes or by the Ottoman army. On the top floor is a prayer room (*muṣalla*) and a coffee room. The tower is provided at the top with loopholes pointing in all directions.

The tower of Shada

This duct tower was built by ʿĀlī b. Marʿī, the ruler of ʿAsīr, in 1835 (ʿĀl Saʿūd, 1989, 50) overlooking the centre of Abha. The tower, named after a high mountain in the north section of the lowlands, was famous for its durable stonework. The tower was used (al-Sayyid, 1989, 51) as a residence (*qasr*) and as a fort (*ḥiṣn*) by ʿĀlī and his son Muḥammad. After the fall of Raida fortress and the rule of ʿĀlī came to an end, the tower became the seat of the occupying Ottoman army, and after ʿAsīr had been annexed to Saudi Arabia, the tower was used as the governor's office (*maqar al-imarā*) until 1935, when the tower of Mushrif was used for that purpose. The tower was converted to a telecommunication office building and was finally demolished.

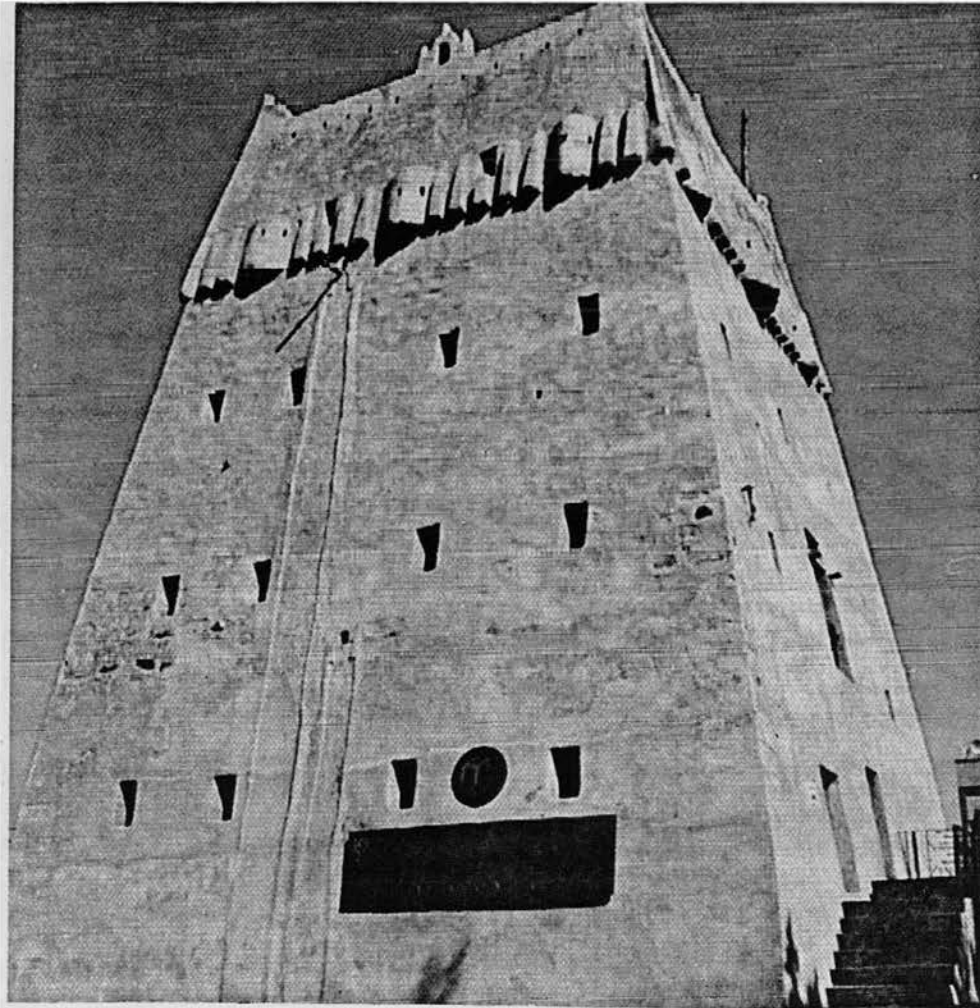


Figure 9.20. The tower of Mushrif in Abha, after ʿAsīr.

The tower of Mushrif

This veneered stone tower (figure 20) is a few hundred meters to the north of *qayr* Shada. It was described in *Western Arabia and the Red Sea* (1961, 564) as "the white tower". It was built by a prominent local family in 1929 (Āl Sa'ūd, 1989, 46). The tower was used for living and as a defensive tower. In a feature similar to 'Azīz, loopholes are absent from the rooms of the tower, but the tower is provided with a number of projecting niches (*matārīs*) at the top, punctuated by holes pointing in all directions. It has a sharper pyramidal form than those of 'Azīz, Nājīḥ, and Shada. The tower has crenellation at the top, and is provided with lavatories on the second floor and at the top of the tower, as indicated by the superficial water disposal shaft (*sarab*).

But the tower is different from 'Azīz, Nājīḥ and Shada in a number of features. The tower has no duct , which explains the sharp leaning of its walls inside to provide structural support for the tower. The absence of loopholes from the tower explains the large number of niches (*matārīs*) on the fourth floor, where defenders sit and shoot the attackers. It has a balcony at mid height in the east wall, which recalls that of the white *ḥuṣn* of the north section of the highlands, described by Dostal (1983, 105) . The tower is at least one floor lower than 'Azīz and Shada. It is now converted into a local museum and is incorporated into the newly-designed government office (*imāra*) in Abha.

Conclusion

Duct residential towers are rare. In the past, the people of the highlands lived in compact stone villages. Owing to the social stability which the highlands have experienced in the last decades under a central government in Abha or in Riyāḍ, some people built their tower-houses outside their villages, enjoying the new status of peace. To provide protection against attackers these towers had to be provided with a duct. The residential towers of Mṣannif and al-ʿUkāṣ village reflect this situation.

As the highlands of ʿAsīr had contacts with neighbouring regions such as Yemen, al-Ḥijās, and Najd in central Arabia, and owing to the military contacts with the Ottoman army, the local clan leaders built towers. To express authority in the region, and to reflect socio-political status, these towers were fortified at the top with complex loopholes not found in the defensive towers built by local villagers. These towers were veneered and were built higher than village towers. The few towers mentioned above reflect these ambitions. In these towers the height of the tower and the roof line are tools of expression.

Naming these towers is an important feature. The names of these towers are influenced by topography (Zahwān, Shada and Mushrif) and they are called after high mountains. Others are named after sub-tribes (ʿAzīz and Wāzʿi). Others are given auspicious names (Nājiḥ) or the names of clan leaders (Mṣannif). However the name of a tower may also be used for the village which comprises the tower and its surrounding areas.

These towers are similar to their predecessors in stone compact villages which are used as grain or defensive towers in the functional organisation of their spaces. The rooms are used according to the principle of privacy and security. The lower floors are used for storage and the upper floors are used to defend the towers. The proliferation of complex loopholes at the top of these towers is an indication of this feature. Although these towers are veneered, as a reflection of the high status of their builders, they were built in a similar technique to that of their predecessors.

CONCLUSION

This thesis has dealt with two main issues regarding the native architecture of ʿAsīr : the classification of building types across the highlands and the understanding of a specific type of tower. In this final chapter the results of these themes, as presented in the thesis, are discussed and a few suggestions are made as to how these results may be put to use in future.

The phenomenon of towers in ʿAsīr

Towers across the highlands of ʿAsīr represent an important local phenomenon. As we have seen in this thesis, such towers are not rare, but rather survive in their thousands- a figure based on the number of villages across the highlands which, according to Āl Saʿūd, [1989, 25] exceeds five thousand. The first question that comes to mind is, how can such a phenomenon be explained?

Heinle (1989, 7) says:

" Towers have been built in almost all cultures from time immemorial. What motivates people to build them? A philosopher once spoke of a " drive toward height." There is certainly much truth in such a formulation, for people feel an urge to climb mountains in order to see the world from above, to escape the limits of the near-at-hand, to broaden their view. They want to experience something..... The height of the towers was also intended to express power and prestige. Konrad Lorenz coined the expressive phrase " the propensity to impress; " , this propensity led to the (sic) massive , ponderous towers for the purpose of aweing and intimidating the enemy."

This statement applies directly to the towers of ʿAsīr, for it indicates the influence of mountainous topography on architecture, as if indeed towers imitated

mountains. Naming the towers after high mountains indicates the pre-occupation of the local 'Asīr people with mountains. The statement also notes how towers, as revealed by their names, are used as symbols of prestige, power, victory and wealth.

The mountainous topography of 'Asīr isolates it from contacts with outside cultures. The 'Asīr region as a whole may be defined as a distinctive geographic area defined to the east by the sand dunes of the Empty Quarter and to the west by the Red Sea. The highlands of 'Asīr are defined to the east by the sand dunes, but to the west by the escarpment. In this respect, the sand dunes and the escarpment are natural barriers which isolate the highlands from contacts with outside cultures, and thus the architecture has kept its original features intact throughout the centuries. The practice of using local builders to build these towers, instead of calling on the services of foreigners, could only increase this isolation. It seems probable that each clan would have its own builder.

Another factor which has led to the proliferation of towers in 'Asīr is their efficiency. The towers are fundamentally efficient structures. They are used in many ways. We have seen how a tower (that of Fāqil for example,) was used as a granary, a defensive tower and watch tower, and finally as a residential tower. At the same time, and throughout the course of its evolution, the tower has delivered messages of social and economic significance. We concluded in Chapter Two that tribal rivalry has inhibited the people from developing civic societies, and consequently villages were built without protective walls or other advanced defensive measures (moats for example) .Watch towers provide an effective early warning system, defensive towers provide a place of refuge, and grain towers are the economic reserve of the people. Against this social background, the tower is an efficient expression of cultural significance.

The architecture of 'Āsīr (see Chapter Three) is that of an agrarian or a pre-urban society. The dominance of grain towers over other buildings in the landscape reflects this feature. The towers of 'Āsīr are archaic. They are always found detached and in simple shapes. Parallels with Yemeni architecture could obviously be drawn, but this is not the place to do so.

Like the towers themselves, the architectural space inside the towers of 'Āsīr is archaic. We have seen that the spaces inside the towers are for storing grain or for short periods of occupation. In zones B and C we have seen that residential towers are not structured around important spaces. Only the reception rooms of the towers can be defined by name, by size, or by the definition of painting. These reception rooms are designed not for the members of the family but to entertain and to impress guests. The other spaces of the towers are not restricted to a particular function and serve for example as sleeping quarters for the family. The architectural terminology presented by Prochaska does embrace concepts of space.

By accommodating themselves to the outside environment, the towers comply with other elements in the landscape. They are well integrated with the fields, the water channels, the water wells and their symbiotic villages. In this agricultural society, the possession of land is significant for the survival of the people. The towers, owing to their vertical shape, become posts of demarcation. They are territorial symbols. In the physical outdoor environment, moreover, the people are guided by the towers in their travels. The towers thus become symbols of physical orientation. This is also true in cultural terms. Grain towers reflect an essentially agrarian society, while defensive, watch and retreat towers reflect the fragmentation of society into a mosaic of warring tribes. As most towers are multi-purpose, they indicate the complex social fabric of the people and the efficiency of this type of building. They can symbolise villages-for example, stone compact villages.

The setting of the towers in their outdoor environment corresponds to the social and economic activities which take place in it. In the villages, the daytime is spent in the fields, or in the grazing lands, and the towers stay empty. Only from dusk onwards are the towers occupied for a short time as places for gathering and to sleep in during the night. Residential towers are reduced to sleeping rooms. Thus the architectural space inside the towers is in contrast to the external significance of the towers.

Historical aspects of the towers

A brief statement on the history of the architecture of ʿAsīr has been made by William Facey (1993, 12):

" Just how ancient is settlement in Southwest Arabia's mountains and coastlands remains uncertain, but evidence exists from the Neolithic period of some 4000 years ago and more."

Another relevant statement (found in al-Qahtani, 1992, 231) was made by the Ottoman viceroy to ʿAsīr. The report which he sent to the central government in Istanbul is vivid in its description of an ancient site, and I therefore, preferred to present it complete:

" While riding my horse in Dhahban desert I was attracted to a significant matter (*amr fi muntaha al-ahammiyya*). I saw traces of straight lines reaching several kilometres and each line was perfectly parallel to the next one. Soon I got off my horse and traced these lines . I found them to be regularly-built stone foundations supporting walls. I measured the distances between each pair of neighbouring parallel lines and found them to be forty metres ." (my translation)

The site of Dhahbān is 35 kilometres east of Abha and is now surrounded by the residential neighbourhood of Khamīs Mushait. The architecture there is of the composite and the mud types. He also says:

"I think as an explanation of these lines, that this country (*hādhihi al-bilād*), when it had a great civilisation, was full of people and that arable land was extremely important to them. They used to distinguish between the fields and the gardens by building walls . These walls have collapsed but their foundations are still represented by stone foundations. I have no doubt (*wa ana lā yukhāmīruni al-shakk*) that the civilisation (*ḥaḍāra*) of ‘Asīr is much older than that of Yemen."

The surviving stone foundations indicate that the architecture there was of composite type. However it appears that gardens were fashionable in ancient Arabia and continued until the dawn of Islam; Musailama the liar (al-Ṭabarī, 1987, 279) used his garden as his last refuge when he was attacked by Muslim troops.

The Ottoman viceroy also gives the reasons that led to the decline of the civilisation of ‘Asīr:

" But it has fallen into darkness (*ẓulmāt al-tārīkh*) because, I think, it is located on the invaders' route to conquer Yemen and other Western Asian nations."

Moreover, he states that after the emergence of Islam, the local civilisation of ‘Asīr declined still further, owing to the exodus of its people to different parts of the Islamic world:

" The morale of the people fell after the advent of Islam because the majority of the Qaḥṭānī troops which constituted the core of the invading army in Asia and Africa were from ‘Asīr. And when they reached these countries they settled there and did not come back to their native land."

Another significant clue to the ancient and complex history and ethnography of the region is to be found in the construction of the tombs of Wādī ‘Iyā and Wādī Tirj. These sites represent a challenge to archaeologists to discover the ancient history of the region. The significance of archaeological research in South-western Saudi Arabia in revealing details of early Muslim architecture has been acknowledged by King (1991, 99). Such research would not only reveal the role of the ‘Asīr region, but would also

cast light on the ancient history of the Arabian peninsula as a whole. It would contribute to a better understanding of some parts of the Qur'an, such as those describing legendary towers (*quṣūr*), and of texts written by Arab historians and geographers.

The village of al-Sūda as a conservation site

In the rapid changes of the built environment in 'Asīr, which have resulted in severe neglect of the local architecture, the conservation of villages and towers is essential. Many villages of the highlands are worthy of preservation. Among the villages described in this thesis the village of al-Sūda is probably the most worthy of preserving for a number of reasons. Unlike the villages of al-'Ukās, the village of al-Sūda is in good condition and little work is needed to regain the original character of the village. Unlike the village of al-Makhaḍ, the village of al-Sūda is not spoiled by concrete buildings or steel hangers except for the low-rise mosque built in concrete blocks which is detached from the village and can be rebuilt in stone.

The village is also completely deserted which makes it an easy subject for conservation. There is no need to force the residents out of their village because it is already deserted. This would spare the government a lot of compensation money, for had the village been occupied, the residents would have had to be compensated for their houses.

The village is the highest settlement in Saudi Arabia. This makes it a point of attraction, and people, having acknowledged this fact, would come to the village to claim this honour that they have been to the roof of Saudi Arabia. As a matter of fact this is a memorable experience as I myself have felt while touring the village.

The village is easily accessible. It is located on the Abha-al-Sūda road which is probably (at least according to the impressions of tourists) the most beautiful road in Saudi Arabia with a multitude of beautiful natural features. The road terminates near the village. Al-Sūda enjoys a unique topographical setting. It majestically crowns a mountain transformed into terraces in perfect visual harmony. These are in their original form. Therefore preserving the village would also benefit the whole topographical composition and would ensure that the terraces and the village remain as Philby described them a "Roman amphitheatre." The village is close to the Inter-continental Hotel, the largest and most luxurious hotel in 'Asīr. The hotel guests can use the village as a window on the social history of the region.

However the village grain tower (of the duct type), which is now in ruins, must be rebuilt. This is extremely important because the village at present is monumentally lacking its vertical dimension. The tower would transform the village from unnoticed compact stone houses into a physically recognisable village. The tower would transform the topographical setting and the village into a new dimension. It would enrich the memory of visitors about the village and the 'Asīr region as a whole.

The duct- final remarks

As duct stone towers constitute the core of this thesis, it is appropriate to end the thesis with a few suggestions about how duct towers and the duct in particular as a design element can be incorporated into contemporary and future local architecture of the region. We have seen in Chapter Five that the duct functions on different levels. At the visual level it can be used in future local 'Asīr architecture as a visual device. The association of the duct with the main entrances of towers can be used to lead people

towards the entries of future buildings. It would also give such buildings a sense of symmetry and balance. This is particularly desirable in governmental buildings which sometimes require extra balance and symmetry because of their official function.

The duct creates depth in the main facade. It would relieve the main facades of future buildings. Windows, for example, may not be needed to the same extent. As a design element, moreover, the duct can be used as an organiser of space. The inside spaces of future buildings can be organised around linear central well inspired by the duct on the main facades of traditional towers. In other words, the duct must not only appear in building facades but must also be used to generate and organise spaces inside future buildings.

The duct can also be used as an elevator shaft. It is an ideal design element for such a function. The stone missile in the native duct tower can be replaced by the elevator. In social terms this is perhaps a legitimate transformation. The stone missile as a symbol of tribal warfare would be replaced by the elevator which would become a symbol of peace and safety. This can be seen as a neat conclusion to the discussion of the duct in the context of this thesis and in the context of contemporary and future 'Āsīrī architecture. Finally, in philosophical terms the duct would connect the world of man with the spiritual realm above and thus the duct can be used in future religious architecture (mosques for example) to deliver that message. Minarets can also be built in duct tower fashion. The duct would function as a " divine duct".

These suggestions for various future uses of the duct form show that, as a symbol of 'Āsīr, it is an architectural form still full of life and capable of much creative development in the future.

Appendix A

The pictorial evidence of early vernacular Muslim architecture in Syria and its relationship to the duct stone towers of ‘Asir

Figure One shows a mosaic on the west wall of the portico in the great mosque of Damascus. The scenery is that of a village in a green landscape. In the foreground of the mosaic is a water channel with a bank of lush grass and two large trees which define between them the village compound.



Figure 1.

A mosaic panel on the grand mosque in Damascus, after Ettinghausen.

The village is built of two clusters of towers built in a mountainous topography. The towers of the first cluster in the lower ground are solid except for their entry doors. The towers are attached to each other, working as a protective wall in a way similar to the village of al-'Ukās described in Chapter Eight. The towers correspond to the mountainous topography, as may be detected by the stepping of their windows and their roofs. The towers of the second cluster at the back of the village compound are higher than those in the first cluster. These towers also correspond to the local topography, as revealed by the stepping of their roofs and the windows below them. The two clusters are separated by an open yard. The village compound is flanked at the back by a flat-roof tower reminiscent of the grain or defensive towers in the stone villages of the Asir highlands.

However these features are not entirely native to Arabia. The gabled roofs of these towers indicates the influence of the Byzantine style on the early Arab architecture of Syria. The same feature appears in the Umayyad mosque in Damascus. This mosaic links early Umayyad architecture in Syria and the pre-Islamic villages in the southwestern highlands of Arabia as they survive today with their original features intact in 'Asīr.

Early Muslim Architecture, V. I, illustrates a number of mosaics in the Umayyad Mosque at Damascus. Marguerite Van Berchen (Creswell 1979,333) describes the images in figure 2 as follows:

"Standing out from a background of foliage, it is composed of houses with double-sloped roofs and gables, covered by large stone slabs or terraced roofs. A round tower, capped by a pointed roof, dominates the village. We always find the same type of houses, narrow and lofty, with bare walls pierced with windows, and with an unduly high doorway."

She also (Creswell, 1979, 331) says: " The doors of these towers are high and narrow." The narrow and lofty towers of the village are similar to those in the mosaic illustrated by Ettinghausen. However the high doorways of these tower-houses deserve further discussion. Visually, these doorways are so high that it is difficult to accept that they were used only as entrances. One may argue that these doorways are like ducts, and thus the towers of the mosaic are duct towers.

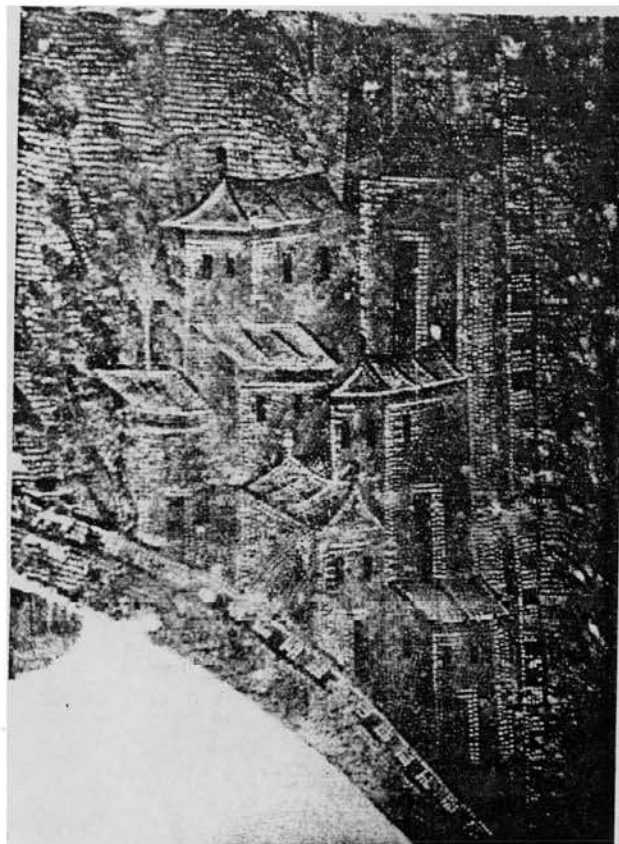


Figure 2.A mosaic in the Umayyad Mosque, Damascus, depicting a village, after Creswell.

These high doorways are not found at random. They are to be seen only in the towers as shown in figure 3 which illustrates a tower with a high doorway and two low-rise houses with short doorways. We have seen in Chapter Four that the duct is a structural, defensive and visual device. But if these high doorways were ducts, what was their purpose in these towers?

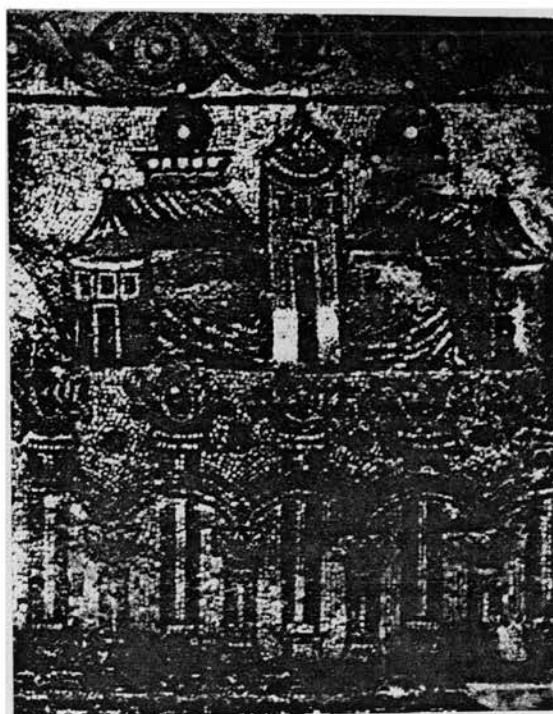


Figure 3.

A mosaic from the Umayyad Mosque , after de Lorey.

Figure 2 suggests that these doorways were cut deep into the walls of the towers. Therefore they could have been applied to these towers for structural purposes: to protect the lintels of the entry doors from the weight of the towers, and to provide support for the towers in a horizontal direction. It is difficult to accept that these duct-like doorways perform a structural function, owing to the fact that the use of cut stones or brick enables people to build towers without the need for ducts. In the stone towers of ‘Asīr, the duct was invented owing to the use of irregular small stones.

The absence of a projecting stone niche in these towers (figure 4) of the kind found in duct towers in ‘Asīr above these long doorways, and employed to drop stone missiles through the ducts, suggests that these doorways were not designed for defensive purposes.

Figure 4.
A mosaic panel from the Umayyad Mosque in Damascus.



The purpose of these doorways is suggested by Van Berchem in her statement mentioning " unduly long doorways". For Arabs, the gate has always been an important element to impress visitors. And for the newly-settled Arabs in Syria , such long doorways provided a sense of grandeur . It also provided a sense of symmetry and balance to the towers. Therefore, these long doorways were perhaps applied to the towers in these mosaics for visual purposes. They are reminiscent of the duct tradition in the stone towers of ‘Asīr.

Tribal movements in early Islamic times

The ethnic origin of the early Muslim settlers in North-west Arabia and Syria supports this assumption. After the collapse of the Ma'rib dam in Yemen (al-Mas'ūdī, 1978, 173), the people of the Āzd tribe left Yemen and settled in the Sarah, which is known today as 'Asīr. Here, they settled beside a body of water called Ghassān, and having drunk from this water they were named Ghassān. After they had multiplied their numbers, they left this place travelling northward. The two tribes of *al-anṣār* (al-Aws and al-Khazraj) who protected the Prophet in Madina were both from Ghassān.

Al-Qalaqashandī (1963, V II, 319) states that the Ghasāsina (from Ghassān) ruled the Arabs of Syria until the advent of Islam. Their last king was Jabala bin al-Aiham who was converted to Islam in the reign of the caliph Umar. He states that some people of Ghassan settled in Ḥims, al-Yarmūk and other places in Syria. They also migrated westward. A number of them settled in Manfalūt, which is a district of Egypt. This historical background enhances the suggestion that, with the advent of Islam, the ancient settlers of 'Asīr might have used the duct as a visual device in their newly-built villages in Syria.

Donner (1981,147) has stated that:

" Beside great numbers of the Quraish, various Yemeni tribes appear to have been prominent in the armies sent to Syria, in particular the Azd, who are said to have made up one-third of the army at Yarmūk as well as.....Khath'am...."

The Azd are the ancestors of most tribes of 'Asīr and the tribe of Khath'am still occupies the north section of the highlands of Asīr.

Philby (1976,147) and Grohmann (1972, 528) have linked the composite towers of ʿAsīr to a Chinese pagoda. Marguerite Van Berchem (Creswell 1979,341) in turn links the lofty tower of a small hamlet on a mosaic in the Umayyad Mosque [plates 55c, 55 a] to a Chinese pagoda. Thus all three scholars seem to be arguing the same point of view, and while a Chinese pagoda is not a helpful comparison, the feature of courses of slates in tiers supports the idea of a link between ʿAsīr towers and the Damascus mosaics.

The ethnic evidence of early settlers of al-Fuṣṭāṭ

Mass migration from the South and Southwest Arabia eventually reached Egypt. Al-Fuṣṭāṭ, the original Arab capital of Egypt founded in 642 A.D., was populated by new settlers from South and Southwest Arabia as stated by Kubiak (1981, 62)

"Much more numerous were South Arab settlers. It appears that groups from almost all the principal tribes were represented at the foundation. In alphabetical order they were as follows: Al-Azd with their sub-tribes; ʿAkk.....Azdites whose homes were in the borderland of Yemen were usually regarded as a branch of Lakhmids."

The mention of the Azd tribe and the "borderland of Yemen" points to ʿAsīr which was the home of the Azd. Another statement by Kubiak (1987, 98) reads:

" Its inhabitants consisted of groups of people from tribes and clans of al-Azd, al-Ḥajr, Ghassān,"

The tribe of al-Hajr in this statement is that of Rijāl al-Ḥajr which is dispersed over the central section of the highlands and incorporates the following sub-tribes: Banī ʿAmru, Banī Shihr, Ballasmir and Ballaḥmir. This statement indicates that the clan of Ghassan in addition to moving northward to Syria, also moved westwards to Egypt; and like other Qaḥṭānī clans they settled in al-Fuṣṭāṭ.

Finally, Kubiak (1987, 64) mentions ‘Āsīr by name as the source of influence on the building of the city:

Figure 5 shows the ethnic map of the city. The Azd tribe occupied the northwest side of the city alongside the east bank of the Nile.

Figure 5. Ethnic groups and multi-tribal quarters of al-Fustāt, after Kubiak.

The mosaics of the Umayyad mosque in Syria and the ethnic division of the city of al-Fustat in Egypt alike testify to the influence of south-western Arabia on the building traditions of early Muslim centres. However, other expressions of this influence and its impact on the development of early Muslim architecture requires further research.

Appendix B1

Architectural terminology

‘*adhba* : a wood member dividing grain compartments in composite grain towers

aḥwāḍ : shelves for storing grain

aḥzima : metallic bands of doors

alwāḥ : wood panels of doors

‘*arṣa* : floor

‘*asla* : main beam

‘*ataba* : threshold of a house

bānī : master builder

baraḥa : public compound

baṣṭa : public compound, or hallway in the upper floors of residential towers

bāsūṭ : entrance hall

bītar : buttresses

burj : projecting niche in defensive towers

dabab : fixed bench in a reception room

ḍabba : lock groove

daima : low, dark room sheltering animals

daraī : staircase

farkh : small door within a door

furūd : main wood beams carrying floors and roofs

ghurāba : covered exit to the roof in a tower-house

ghurfat al-ḥurāsa : guard room

ghurfat al-hurrās : guards' living room

ḥadda : wall painting; a superficial protrusion in stone walls used as a stiffening device

ḥadhya : stone platform supporting stone towers

ḥāmya : defensive and a watch tower

ḥauṭa : parapet

ḥawī : yard for cows, sheep or goats

ḥināk : the top mud course in composite towers

ḥiṣn : defensive tower-house

‘ilw : room on top of a tower-house

izār : lower part of a painted wall

jahwa : small room opening into the threshing yard

jar‘ā : sticks of dried plants used as secondary beams in floor construction

jarīd : secondary beams

jaṣṣ : ground plaster

jidār al-naḥr : duct wall

jūba : a roof outlet

kaḥal : small pieces of stone inserted through stone walls

kawākib : large metal nails on doors

khalwa : entrance hall to a house

khauram : white stone used to produce a cement-like material after firing

khudār : scrubbing of floors with green plants

khulb : mud mortar

kiswa : structural platform

kutra : window

lahī : window

luqf : ledge inside mud and composite towers for keeping personal belongings

ma'dal : main beam

mabda : a window, a loophole

mabrūm : stone-built round tower

madāfin : underground granaries

maḍrab : loophole with a single opening

maghsal : lavatory

maḥājir : quarry lands

majlis : guest reception room

makhzan ḥabb : room for storing grain inside tower houses

malhab : the " kitchen "

mandā : public compound

maradd : groove for locking a door

mashrabiyya : wooden screen

matārīs : loopholes with multiple openings

mayāfī : fixed ovens

mi'dhana : minaret

mi'qam : the lower frame of a door

mīdafa : wooden device to level the ground

midmāk : mud course

miḥrāb : prayer niche

mikhlabā : place where mud mortar is made

mikhwāl : room for sheltering animals

milāj : mud mortar

miqlā' : a quarry

mishwāf : triangular decorative motif of quartz in stone walls

mithwad : fixed container for animal food

munadda : a quarry

muqahwa : living room

muqallaṭ : guest dining room

muraḥḥab : public compound

muṣalla : prayer room in a defensive tower

nahd : metal circles on doors

naḥr : duct

naḥt : carved stones

naqsha : wall painting

naṭaf : stone slates

nauba : finial crowning a tower or terrace at the top of a tower

nūra : whitewash

qaʿid : wood chairs

qaḏād : cement-like veneering material

qarya : a grain chamber

qaṣaba : grain , defensive tower or watch tower

qaṣr : stone , whitewashed tower house or tower-house

qaṭṭa : wall painting

qunʿa : top end of the duct

radm : door lintel

raff : grain tower

raqaf : stone slates

ruṣa : a stone step inside a house

sabīl : street inside compact village

saḥīf : shelves

saḥīf : stone terminating the duct at the top

ṣaḥn : courtyard of a mosque

sakk : a pier carrying the staircase inside the tower

sakkāra : wood locker

ṣalal : fire-place

saqīfa : room to store threshing and other agrarian equipment

ṣarab : wooden groove to drain rain water

saraḥa : public compound

sās : stone foundation of a tower

sayyārī : hallway connecting two detached towers

sharwa : rooftop of a defensive or grain tower

shin'a : doorway leading to the roof of a tower-house; staircase shaft

sidda : street in a village

siflī : lowest room in a house, used for sheltering animals

ṣihār : whitewashing of inside walls

siyā' : wooden device for hanging clothes

ṣubyān : mason's assistants

sunūn : stone staircases inserted into a stone wall

ta'rīfa : carpet-like decorative motif of quartz in stone walls

talyīs : cladding

ṭarrād : entrance hall of a residential tower

ṭāya : roof outlet for ventilation and light

thurayya : linear decorative band of quartz in stone walls

APPENDIX B 2

Non-architectural terminology

‘ain : perennial spring

‘ar‘ar : junipers

jarf : escarpment

aṣl : native people

athl : tamarisk

‘aththarī : rain-fed fields

baidar : threshing floor

baṭn : sub-tribe

bilsin : lentils

bisāṭ : sheet made of palm trees

bulḥut : coffee servant; joke and storyteller

burr : wheat

dalla : a coffee bowl

daqīq : flour

ḍarīb : cold weather causing harvest damage

dawīs : threshing of grain

dharī : planting the seeds

dhura : corn

dibya : bowl for shaking yoghurt and extracting butter

dijr : beans

faidi : drummer

fakhdh : sub-tribe

Farānsī : French currency unit

fīrqat al-handasa : the engineering team

firkis or *khaukh* : peach

fix : *Ficus salicifolia*.

qamla al- saudā' : black louse which causes grain damage

ghadīr : small, deep body of water

haḍba : plateau which constitutes the larger portion of the uplands of Asir

ḥadda : corner of a tower, wall painting

ḥāik : carpet, rug, and wool maker

ḥamrī : red corn

ḥaṭab : firewood

hawwa : escarpment

ḥima : tribal law controlling land use

ḥirāba : warfare

tihāmat al-sāhil : lower elevations and coast of the lowlands

‘itm : olive trees

jarīn : threshing yard

jūna : multi purpose basket for keeping household items

kādī : *Pandanus tectorus*

kammiyya kabīra : large amounts of agrarian equipment

kharrāz : a jewellery maker

khazn : storing of grain

kuḍāma : artificial water passage to fields

maḥḥaḥ : salt merchant

majlis al-ā'yān : village council

majlis al-qabīla : tribal council

makhzan : storage room

manāshir : grazing land

mbarrim : oven-maker

midwasa : tool for threshing grain

miḥmās : metal bowl for heating coffee

miḥrāth : plough

mijmar : incense burner

milḥaf: leather mat

muʿaṭṭab : cotton blanket

mudharra : place in the threshing yard to sieve grain

muḥalla bi l ẓakhārif : embellished expensive chairs

muqṭaf : grain basket

naʿnaʿ : *Mentha longifolia*, *Mentha microphylla*

nīṣ : soft type of sand mixed with grain to prevent it from destruction

nisʿa : leather rope

qaraḍ: kind of acacia wood

riḥ ā : a traditional grinder

rummān : pomegranate

sūfī : rain drops falling diagonally

ṣānʿi : smith and metal-worker

sarā : uplands

sha'īr : barley

shafa : escarpment

shakwa : bowl for shaking yoghurt and extracting butter

sharīm : sickle

shathth : *Dodonea viscosa*,

shu'ūf : highlands

suqa : manual irrigation

taḥn : grinding

ṭalḥ : acacia

tāliq: giant fig trees

ṭaraf : craftsmen

tasharruq : exposure to the morning sun seeking its warmth

ṭaur : the escarpment

tihāmat al-aṣḍār : the interior parts of the lowlands

tīn or *ḥamāṭ* : fig

‘uṣāba : head cover

‘uthrub: *Rumedn ervousus*

wādī : water channel

yawm al-sūq : market day

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